

2302
1908-1911
JANUARY, 1908.

Vol. XI.

THE NATAL AGRICULTURAL JOURNAL

Of Special Interest:

THE ELAND UNDER DOMESTICATION.

THE CULTIVATION OF CAMPHOR.

PLACE OF LEGUMES IN OUR AGRICULTURAL SYSTEM.

MANURES ON THE NATAL MARKET, SEASON 1907.

ORCHARD CULTIVATION: DIFFERENT SYSTEMS.

TOBACCO CULTIVATION IN SOUTH AFRICA.—Continued.

Notes and Comments.—Entomologists' Notes of the Month.—Exchange
Reviews.—South African Markets.—Oversea Maize Market.—
Weather and Crops, etc., etc.



PRINTED AND PUBLISHED FOR THE DEPARTMENT OF AGRICULTURE
BY TIMES PRINTING AND PUBLISHING COMPANY, LTD.,
PIETERMARITZBURG.

SUBSCRIPTION:

FIVE SHILLINGS per annum (in advance), post free.

*It is hereby notified that all matter contained in the
Natal Agricultural Journal
is protected by Copyright. Newspapers desirous of
republishing any articles may do so provided the usual
acknowledgment be made.*

**The Journal may be obtained from the Publishers, THE TIMES
PRINTING AND PUBLISHING COMPANY, LIMITED, MARITZBURG, NATAL,
upon payment in advance at any time of an Annual Subscription of 5s.
With the exception of the Portuguese Colonies, the Journal is franked to
all parts of South Africa. Postage to England, 2s. 6d. per Annum extra.
Business Communications to be addressed to the Publishers.**

The Journal is issued on the last Friday of every month.

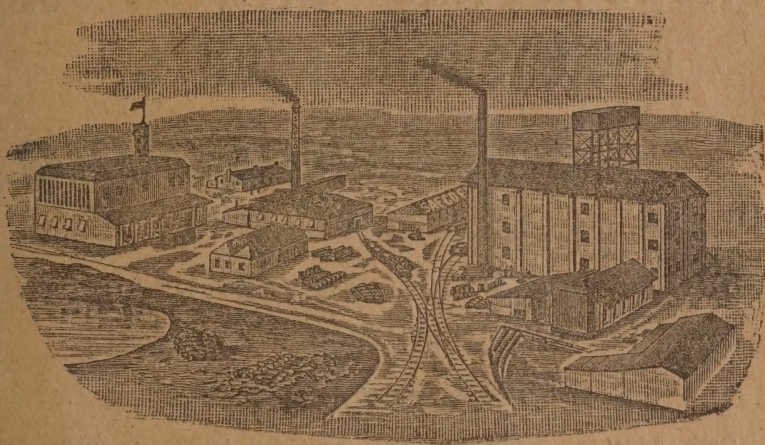
**Literary Communications to be addressed to the Editor, "Agricultural
Journal," Department of Agriculture, Maritzburg.**

S A F C O

- FERTILIZERS -

—ARE USED BY ALL—

UP-TO-DATE and PATRIOTIC FARMERS.



SAFCO WORKS, UMBILO.

SAFCO Fluid Dip.

SAFCO Powder Dip.

SAFCO Cattle Lick.

Vaporite.

THE SOUTH AFRICAN FERTILIZERS CO.,

TELEGRAMS : **UMBILLO, DURBAN.** TELEPHONE : **No. 26, Durban.**
'SAFCO, Umbilo.'

BY SPECIAL
APPOINTMENT TO



HIS EXCELLENCY THE
HIGH COMMISSIONER.

P.O. Box 63.

Tel. Address: "NAVAL."

HUBERT MORISSE & CO.,

PRODUCE AND LIVE STOCK
COMMISSION AGENTS,
JOHANNESBURG.

~~~~~  
PRODUCE & LIVE STOCK OF EVERY DESCRIPTION  
SOLD ON COMMISSION.

~~~~~  
Cash Advances made on Goods sent for Immediate Sale.

Write for our Weekly Market Reports, sent Free on Application.

PROMPT SETTLEMENTS.

Correspondence Invited.

Bankers: A.B.C., Ltd.

~~~~~  
**MAIN STORES:**  
**Corner Loveday and Frederick Sts.**  
**BRANCH AT OPHIRTON.**



# Alex. Cross & Son's

(LIMITED)

## FERTILIZERS.

HIGH GRADE SUPERPHOSPHATE.

ORDINARY SUPERPHOSPHATE.

BASIC SLAG.

DISSOLVED BONE COMPOUND.

POTATO GUANO.

BONE DUST.

All of Best Quality . . .

. . . Prices Moderate.

WE GUARANTEE EXECUTION OF ALL ORDERS  
BOOKED WITH US FOR COMING SEASON. . .

**J. RAW & Co.,**  
**MARITZBURG**

SOLE AGENTS FOR NATAL.



**FLEET.**

|                  | Tons. |
|------------------|-------|
| S.S. Umhlali ... | 5,000 |
| " Umzumbi...     | 5,000 |
| " Umvolosi...    | 4,500 |
| " Umsinga ...    | 4,500 |
| " Umtata ...     | 3,500 |
| " Umgeni ...     | 3,500 |
| " Umvoti ...     | 3,500 |
| " Umtali ...     | 3,500 |

**FLEET.**

|                 | Tons. |
|-----------------|-------|
| S.S. Umfuli ... | 3,300 |
| " Umhloti ...   | 3,100 |
| " Umkuzi ...    | 2,800 |
| " Umbilo ...    | 2,500 |
| " Umlazi ...    | 2,200 |
| " Umzinto ...   | 2,200 |
| " Congella ..   | 2,200 |
| " Pongola ...   | 1,800 |

## FORTNIGHTLY FAST DIRECT SERVICE BETWEEN LONDON      AND      NATAL.

### To Importers of LIVE STOCK, POULTRY & DOGS:—

This Line of Steamers affords excellent advantages for the importation of Live Stock of all kinds, and has an unrivalled record for the carriage of the best Pedigree Live Stock and Poultry of the Colony.

:O:

The Steamers of the London Service have Saloon accommodation amidships on the Main Deck, and are fitted with Refrigerators, Electric Light, and Bells. Surgeon and Stewardess carried.

:O:

Particulars of Sailing Dates, Freight, and Passage may be had on application to:—

**KING & SONS, West Street, Durban.**

### SURVEYS

— Attended to by —

DAVIDSON RIEKIE, M.I.M.E., Box 188, DURBAN.

**OIL ENGINES, Pumps, Riekie's DIRECT DRIVE Hydraulic Rams, "Progress" Hand Brick Machines, Turbines, Mills, Marine Motors, Pipes, Cylinder and Farm Oils, Petrol, "Silverlight" Paraffin, Packing, etc.**

— ESTIMATES FREE. —

**D. RIEKIE & CO.,** *Contractors to the Government.*  
(IRRIGATION ENGINEERS.) **235, Pine Street, Durban.**

# NOW READY.

## Abstract of Laws BEARING UPON Agriculture in Natal.

Published by Authority of the Department of Agriculture.

**PRICE, 2s. 6d.**

TO BE HAD AT THE 'TIMES' OFFICE,



**WATTLE BARK**

**MEALIES**

**AND . .**

**NATAL PRODUCE.**

We are Buyers for Spot Cash.

**Wm. Cotts & Co.,**

**Natal Bank Buildings, DURBAN**

**Produce Merchants, Importers and**

**Exporters . . . . .**

**Telegrams : "COTTS," DURBAN.**

**P.O. BOX 80, DURBAN.**



**“ROSEBUD”**

**. . FLOUR**

**IS**

**THE**

**BEST**

**FOR HOUSEHOLD USE.**

**STRENGTH, WHITENESS AND QUALITY**

**. . UNSURPASSED . .**

**TRY IT!**

**. . Stocked by all Storekeepers . .**

**WM. COTTS & CO.,**

**. . IMPORTERS.**



# A Record for Farmers

TO NOTE.

## G. NORTH & SON

Agricultural Implement and Machinery Merchants,

WERE AWARDED

1st Prize for "BEST COLLECTION of Agricultural Implements and Machinery" at the

|           |   |   |   |   |
|-----------|---|---|---|---|
| 1st Prize | " | " | " | " |
| 1st Prize | " | " | " | " |
| 1st Prize | " | " | " | " |
| 1st Prize | " | " | " | " |
| 1st Prize | " | " | " | " |
| 1st Prize | " | " | " | " |
| 1st Prize | " | " | " | " |

DURBAN SHOW  
 VOOKSRUST SHOW  
 BETHLEHEM SHOW  
 STANDERTON SHOW  
 KOKSTADT SHOW  
 PORT SHEPSTONE SHOW  
 NEWCASTLE SHOW  
 DURBAN SHOW

1st Prize for "MACHINERY IN MOTION" at the

A GRAND TOTAL OF

### 8 First Prizes out of 8 Entries.

AND AT

The JOHANNESBURG AGRICULTURAL SHOW (the Largest and Most Important in South Africa).  
 G. NORTH & SON secured

13 FIRST PRIZES and  
 4 SECOND PRIZES

for their well-known AGRICULTURAL IMPLEMENTS and MACHINERY.

The above Prizes have been won when competing against the most Up-to-date Agricultural Implements and Machinery the Leading Merchants in South Africa could produce, and if these are as the makers and sellers claim—

### THE VERY BEST, G. North & Son's MUST BE ONE BETTER

AS IT IS THE BEST THAT WINS.

## G. NORTH & SON,

Agricultural Implement and  
 Machinery Merchants.

(ESTABLISHED 1869).

P.O. Box 916, Durban.

P.O. Box 127, P.M. Burg.

P.O. Box 493, Johannesburg.

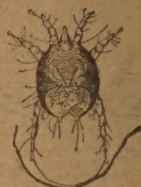


# COOPER'S DIP.

**KILLS SCAB.** - - -

**KILLS TICKS.** - - -

**AND KEEPS BOTH AWAY.**



Farmers should dip Sheep, Goats and Cattle in COOPER'S DIP, which for more than 60 years has been the Stock Farmer's best Friend.

*Write for testimony to—*

**Wm. Cooper & Nephews,**

**P.O. BOX 305, EAST LONDON, C.C.**

# COOPER'S FLUID.

**DISINFECTANT.**

**Strong.**

**CATTLE WASH.**

**Safe.**

**INSECTICIDE.**

**Reliable.**

**SHEEP DIP.**

**KEEPS DISEASE AT A DISTANCE.**



*Vol. XI., No. 1.*

*JANUARY 31, 1908.*



. . . THE . . .  
NATAL  
AGRICULTURAL  
JOURNAL

---

---

Published for and Edited in the Department of  
Agriculture.

---

---

**Publishers :**

THE "TIMES" PRINTING AND PUBLISHING COMPANY, LIMITED.

1908.







# CONTENTS.

---

|                                                                                   | PAGE   |
|-----------------------------------------------------------------------------------|--------|
| AGRICULTURAL SHOWS, 1908                                                          | 3, 105 |
| ALCOHOL, DENATURED                                                                | 45     |
| ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION: Annual Presidential Address | 68     |
| BANANAS <i>versus</i> PLUMS IN ENGLAND                                            | 16     |
| BEE-KEEPERS' ASSOCIATION, TRANSVAAL                                               | 6      |
| BLUETONGUE VACCINE                                                                | 3      |
| CAMPHOR, CULTIVATION, OF: A Possible Industry for Natal                           | 24     |
| CANE-HARVESTING MACHINE, REWARD FOR                                               | 7      |
| COAL AND LABOUR RETURN                                                            | 97     |
| CORRESPONDENCE:                                                                   |        |
| Apiculture: "A Lover of Nature."—A Bean Trouble: Cecil W. Martin                  | 85     |
| DEPARTMENTAL NOTICES:                                                             |        |
| Analysis, Fees for                                                                | 103    |
| Bulletins issued by the Department                                                | 114    |
| Central Experiment Farm, Cedara                                                   | 109    |
| Co-operative Societies, Model Rules for                                           | 113    |
| Diamond Drilling                                                                  | 110    |
| E.C.F. Brands Allotted to Infected Magisterial Divisions                          | 101    |
| E.C.F.: Slaughter Cattle                                                          | 111    |
| Employment Bureau                                                                 | 110    |
| Ploughs, Steam                                                                    | 112    |
| Seeds for Distribution                                                            | 113    |
| Stock, Sale of                                                                    | 112    |
| Tree Seeds, Purchase of                                                           | 113    |
| Trees for Sale                                                                    | 113    |
| DITCHING PLOUGH, IMPROVED                                                         | 52     |
| EAST COAST FEVER ADVISORY COMMITTEES: Amended Regulations                         | 73     |
| ELAND UNDER DOMESTICATION. By E. R. Sawyer, Director Experiment Stations          | 1      |



# CONTENTS—continued.

|                                                                                                                               | PAGE   |
|-------------------------------------------------------------------------------------------------------------------------------|--------|
| ENTOMOLOGIST'S OFFICE: Notes of the Month ... ..                                                                              | 61     |
| EXCHANGE REVIEWS ... ..                                                                                                       | 77     |
| EXPERIMENT FARM REPORTS ... ..                                                                                                | 74     |
| FARMERS' ASSOCIATIONS, EXECUTIVES OF ... ..                                                                                   | 106    |
| FERTILISERS, MINERAL ... ..                                                                                                   | 6      |
| FISHING RESTRICTIONS ... ..                                                                                                   | 4      |
| FOREST OFFICER'S REPORTS ... ..                                                                                               | 75     |
| FRUIT AND VEGETABLES, STORAGE OF ... ..                                                                                       | 7      |
| FRUITS, FREIGHT ON CITRUS ... ..                                                                                              | 3      |
| GARDENING NOTES FOR FEBRUARY: By W. J. Bell ... ..                                                                            | 83     |
| GINGER ... ..                                                                                                                 | 5      |
| GLUCOSE, MANUFACTURE OF ... ..                                                                                                | 8      |
| LAND BOARD: Monthly Meeting ... ..                                                                                            | 66     |
| LEGUMES IN OUR AGRICULTURAL SYSTEM, PLACE OF, By E. R. Sawyer, Direc<br>tor Experiment Stations ... ..                        | 36     |
| LUNGSICKNESS AND SCAB, FARMS UNDER LICENCE FOR ... ..                                                                         | 100    |
| MAIZE MARKET, OVERSEA: The Position in December ... ..                                                                        | 94     |
| MAIZE, RAILWAY RATES ON ... ..                                                                                                | 3      |
| MANURES ON THE NATAL MARKET: Notes on the Season's Manures, By Alex.<br>Pardy, F.C.S., Analyst ... ..                         | 35, 98 |
| MARKETING OF CROPS, CO-OPERATIVE ... ..                                                                                       | 11     |
| MARKETS, SOUTH AFRICAN ... ..                                                                                                 | 89     |
| METEOROLOGICAL RETURNS ... ..                                                                                                 | 102    |
| MILKING ... ..                                                                                                                | 13     |
| MILLIPEDES OR THOUSAND-LEGS ... ..                                                                                            | 62     |
| MOLASSES FOR STOCK ... ..                                                                                                     | 4      |
| NOTES AND COMMENTS ... ..                                                                                                     | 3      |
| ORCHARD CULTURE: A Comparison of Different Methods ... ..                                                                     | 53     |
| PARKER, MR. J. C.; RETIREMENT OF ... ..                                                                                       | 59     |
| PINEAPPLES FOR LONDON ... ..                                                                                                  | 10     |
| PIPE-CALABASH TRADE ... ..                                                                                                    | 5      |
| POUND NOTICES ... ..                                                                                                          | 104    |
| ROAD BOARDS ... ..                                                                                                            | 67     |
| RICHMOND AGRICULTURAL ASSOCIATION: President's Annual Report ... ..                                                           | 70     |
| TELEGONY ... ..                                                                                                               | 9      |
| TOBACCO CULTIVATION IN SOUTH AFRICA: With Special Reference to Natal.<br>By E. R. Sawyer, Director Experiment Stations ... .. | 17     |
| WEATHER AND CROPS: Conditions in December ... ..                                                                              | 87     |
| WOOD FOR MATCHES, COLONIAL ... ..                                                                                             | 8      |







ELAND CALVES UNDER DOMESTICATION, GIANT'S CASTLE GAME RESERVE.



*The Natal Agricultural Journal.*

***The Eland Under Domestication.***

By E. R. SAWER, Director Experiment Stations.

AN important natural asset, hitherto little appreciated, and yet to be exploited, undoubtedly exists in the wild fauna of South Africa, and a far-reaching movement for the establishment of sanctuaries, or game reserves, in suitable localities throughout the continent, has had foundation not only in sentiment, but also in a recognition of the potential utility of many classes of game now threatened with extinction. The prevalence of devastating stock diseases lends additional importance to the partial or complete immunity enjoyed by indigenous forms, and has led veterinarians and stock-breeders to seek therein a means of obviating some portion of the resulting losses among domestic animals. When the mule has failed to show any marked degree of natural resistance to horsesickness, the zebroid, or cross between horse and zebra, is destined to play an important part in the tropics, and lack of funds at the disposal of those interested has alone postponed the local adoption of a system which has been brought to an eminently successful issue in Scotland. The late Mr. Zeederberg's zebra teams, running in the Pretoria-Pietersburg coach, may have been a familiar sight to many of our readers, and it is difficult to explain the lack of enterprise which allows so useful a source of quick draught to go unexploited.

In the eland again, the heaviest and most powerful of the African buck, is found a second type lending itself to domestication, and offering, not only the advantage of virtual immunity from the commoner stock diseases, but also good beefing and working qualities. Little difficulty is

experienced in the capture of this beast in open country, and it has been proved to thrive in captivity, rapidly becoming docile and tractable.

In the M'Chekwe district of Mashonaland two eland spans were for some time to be seen drawing wagons in the steadiest fashion, and healthy calves were born in captivity. The purchase of all available animals by a Berlin firm of live stock dealers postponed for a time the completion of a most interesting experiment, but the eland will undoubtedly become an element in the farming system of the Colony.

The rapid multiplication of the buck under the partial protection afforded in the Giant's Castle Game Reserve, and the need for limiting the size of the herd, affords an opportunity for the conduct of a similar experiment in Natal, and steps are being taken to secure and train a limited number of animals during the coming winter. It will further be possible to definitely determine the degree of immunity enjoyed from, or resistance offered to, the various cattle diseases, with the ultimate object of their utilisation in the work of preventive inoculation. In conclusion, it perhaps need hardly be added that the flesh of the eland has always been regarded as the best game meat in South Africa, that of the old males being loaded with fat; while the hide is much valued for leather.

---

It is said that the plum extends over more territory than any other kind of tree-fruit. It thrives well on almost any kind of soil.

---

The use of alcohol as a motive power for automobiles is increasing in France, and the use of a mixture of alcohol and benzole is being tried in the motor buses of Paris with excellent results. As there is more danger of a petrol famine in the not distant future, the chances are that the great and still increasing motor industry will have to turn to alcohol spirit for its ultimate motive power.—(*International Sugar Journal.*)

---

Some industrious statistician has estimated that the ordinary beehive contains about 40,000 bees, says the *Louisiana Planter*. When these bees are not on a strike and make full time from sun-rise to sun-set and work with a hearty good will, they secure about 100 pounds of honey per season, and in order to do this they must take the honey from some 300,000,000 clover blossoms, as it requires the honey from three millions of clover blossoms for each pound of honey stored in the hive.



---

## **Notes and Comments.**

---

### ***Freight on Citrus Fruits.***

As a result of negotiations with Mr. Molteno, representing the Union-Castle Steamship Company, the Government has secured a freight of 60s. per ton of 40 cubic feet for citrus fruits consigned from Natal, in cold storage, for the British market. A primage of ten per cent. is payable in addition, but the whole of this is returnable under the rebate system.

---

### ***Railway Rates on Mealies.***

The General Manager of Railways has notified that, after the 1st January, 1908, mealies for export oversea beyond South Africa will be conveyed from any Station on the Central South African Railways to Point Station (Durban) at a rate of ten shillings per ton of 2,000 lbs., providing such Station be distant not more than 506 miles. Details in connection with these special rates may be obtained on application to the Rates Department of the General Manager's Office.

---

### ***Agricultural Shows, 1908.***

At the end of this issue appears our first list of this year's shows, so far as we are yet able to state. The information has been kindly supplied by the secretaries of the societies concerned, and we take this opportunity of tendering our thanks for the help we have so received. We would esteem it a favour if those secretaries who have not yet replied to our circular letter would kindly do so as soon as they are able to supply any definite information.

---

### ***Bluetongue Vaccine.***

As the result of recent investigations into the disease of bluetongue in sheep, which is productive of so much anxiety to flockmasters, the Government Bacteriologist has been able to produce a vaccine capable of protecting sheep against this disease. The preparation is the outcome of several years' experimental observation, but its issue has been deferred until such time as its efficacy could be adequately tested. The result of such test has been satisfactory, inasmuch as sheep inoculated last season have successfully withstood inoculations of virulent material this year, and that without entailing loss of wool or appetite, or other undesirable results. It is now found possible to produce, at short notice, sufficient quantities of this vaccine to meet all demands at a moderate price; and vaccine is now available for issue to the public by the Government Bacteriologist, Allerton, Pietermaritzburg. Applications for the same should be made as early as possible before the commencement of the sickness season.

### **Fishing Restrictions.**

Under the provisions of Law No. 27, 1890, a Proclamation (No. 5, 1908), has been issued making it unlawful for any person to fish for, capture, or kill any fish in any of the following portions of the specified dams or rivers until the 1st January, 1910:—The Umvoti River, from its source on Mr. Geekie's farm to its junction with its other branch; the Pemvaan River, from its source to its junction with the Pivaan River; the Dundee Reservoir; the Lembonja River, all its length; the Umweni River, all its length; the Ipoleta River, from its source to the Trappist Monastery; the Larana River, from its source to the Umkomaas River; the Incandu River, from its source to Newcastle; the Ingogo, from its source to its junction with the Hart River; the Hugwini, from its source to its junction with the Nonoti River; the Makovana River, from its source to its junction with the Umvoti River; the Umsindusi River, from its source to the Falls at Edendale; Camperdown Reservoir. This Proclamation has been issued in consequence of trout having been placed in the rivers referred to.

### **Molasses for Stock.**

Knowing the value of molasses as a stock food, a correspondent of an American exchange sent a barrel to one of his tenants, who runs a small dairy, with a request to notice the effect on his stock. The results were, he states, that the flow of milk increased from the first day it was fed and the cows improved greatly in appearance; and he goes on to say: "Inquiring of the large dealers in the city who were his largest customers, buying it for their horses, he gave me the name of one of our leading undertakers, and I called on him to learn his experience. He was enthusiastic in its favour, had fed it for some time to all his horses and they were in fine condition, well and hearty and fat."

"Molasses is a soluble carbohydrate which no vegetable eater can live without. The advantage over starch is that starch has to be converted into a soluble state before it can pass to chyme; molasses being soluble requires no effort of the animal. Starch and sugar, as well as molasses, are composed of nearly equal parts of carbon and water, *i.e.*, carbon, hydrogen and oxygen. Formerly molasses, the refuse of the sugar plantation, was washed down the Mississippi River before it was introduced to make alcohol, vinegar and animal food. A friend of the writer, a vinegar manufacturer of Baltimore, imports it by the shipload (30,000 gallons) from Porto Rico to make vinegar. Formerly he made it entirely from whisky, a much better article than from cider unless the cider is made from sound, ripe apples with the full supply of sugar. Baltimore dealers sell molasses at 14 cents a gallon by the barrel. A friend goes every year to New Orleans to lay in his supply."



**Ginger.**

Writing on the 17th December, with reference to the marketing of green ginger from South Africa, the Trades Commissioner for the Cape Colony in London advises that this commodity should be forwarded in small consignments at a time, packed in air-tight cases, as a large quantity would reduce the price on account of the demand always being somewhat limited. He is informed that the market can only take from 3 to 5 tons at periods of a month or 14 days.

A London firm reports that the great trouble with this article is seeing that it is consigned in thoroughly air-tight cases so that it arrives in England in good condition, because very often shipments arrive which are mouldy and are of no value whatever, simply on account of bad packing. The firm is of opinion that if 20 tons were put on the market the price would be knocked down to a very low point as the demand for the article is extremely limited and, as a rule, the commodity is received in small quantities at a time. Green ginger has, however, come greatly into public favour of late years, being now largely used in French cookery, soups, curries, chutneys and other condiments. Its season commences in July and a steady market exists until November. The wholesale price is quoted by an English firm as ranging from 45s. per cwt. upwards according to quality and quantity on the market, and it is sold to the retail vendor from 9d. to 2s. per lb., and, further, to the consumer from 2s. to a comparatively indefinite figure.

**Pipe-Calabash Trade.**

Reporting on the calabash trade, the Cape Trades Commissioner in London states that the demand is constantly increasing. He has interviewed several firms in the pipe trade and has had visits from others asking for consignments, and in each case he has placed them in touch with dealers. In consequence of the demand at present being greater than the supply, the price has gone up, and Mr. Chiappini was informed by a dealer—a gentleman from South Africa—that he had sold a small lot at £41 per thousand. This, of course, was a very good lot, and this price cannot always be looked for, but the Commissioner considers that £25 to £30 per thousand will be a fair price for the best quality bowls unless the market is flooded; but it may be taken that a much greater demand has now been created, and it will consequently take very much larger quantities to flood the market. It is difficult to estimate the quantity the market will really take at present, but Mr. Chiappini thinks that 200,000 to 250,000 bowls per annum are required for the English market. Of course, this is only his estimate; and he thinks that from £25 to £30 per thousand will be the price.

### **Mineral Fertilisers.**

The enhanced prices and possible scarcity in the future of mineral plant food, especially of phosphate of lime and high-class feeding stuffs, are beginning to attract more attention among the British agricultural societies. The *Mark Lane Express* comments upon the increasing degree in which they are used, and remarks that there is a feeling of anxiety that the supplies, especially of phosphoric acid, may not always be sufficient, an event which would certainly arise if by any unforeseen circumstance the imports of concentrated feeding stuffs should be interrupted. Through the medium of concentrated cattle foods large quantities of both phosphoric acid and potash are restored to the soil.

As regards potash salts the position seems satisfactory, because the mines in Germany can supply all requirements for many years, but with phosphate of lime it is somewhat different. During recent years the imports of raw phosphate from different parts of the world have barely sufficed to meet the ever-growing demand for superphosphate, and the supplies of basic slag, important as they are, may fall short of the requirements of agriculture. The purchases of slag through one important agricultural society in Germany have increased during the last ten years from 37,000 tons to 83,000 tons, and will, it is stated, continue to grow.

### **Transvaal Bee-Keepers' Association.**

The formation is announced of an association of apiarists in the Transvaal. At a meeting of bee-keepers held in Johannesburg on the 12th January it was decided that the time was ripe for the foundation of such an association. It was decided that the organisation be styled the Transvaal Bee-Keepers' Association; that the Earl and Countess of Selborne be asked to become patron and patroness, so soon as fifty members were enrolled; that the Right Hon. Louis Botha (Prime Minister and Minister of Agriculture) be asked to become President of the Association; that Mr. F. B. Smith (Director of Agriculture), the Hon. Mr. Justice J. W. Wessels, the Hon. W. A. Martin, M.L.C., and Mr. H. B. Papenfus, be invited to become Vice-Presidents; and that Mr. W. H. Blower be appointed honorary secretary and treasurer. In a circular letter issued by the secretary, it is stated that a few of the advantages which it is hoped to obtain by the formation of such an association are: The probable reduction of railway rates, discount off prices of appliances, the issue of a monthly journal, diary, and district reports, depots for the sale of members' produce and special honey labels for same, free advice and tuition by experts, tangible assistance from the Government, advance of the industry, insurance of apiarists against claims for damages, decreased entrance fees at shows, and the general enhancement of members' chances of success in the industry.



---

**Reward for Cane-Harvesting Machine.**

In the Queensland Legislative Assembly on October 1st, Mr. Paget asked the Secretary for Agriculture if it were the intention of the Government to offer a substantial reward for the invention of a machine that will successfully and economically harvest sugar cane. The response was that thus far the matter had not received consideration. Commenting upon this, the *Louisiana Planter* says that many years ago the Louisiana Sugar Planters' Association offered a substantial reward for such an invention, and although many efforts have been made and large amounts of money expended in exploiting various machines, no successful harvester has yet been brought upon the market, although it should be said in this connection that several inventors now have cane cutting machines at the Audubon Park Experiment Station, and expect to test them there before the conclusion of this grinding. The Hawaiian Sugar Planters' Association did the same thing some years ago, offering a large reward, but there, too, their hopes have failed of realisation.

---

**Storage of Fruit and Vegetables.**

A correspondent of the *American Agriculturist* gives some useful hints on the storing of fruit and vegetables, describing the results of his experiences in this direction. Apples he tried in barrels, boxes, and wrapped in paper on shelves. He then tried spreading them out not more than three or four deep on the cellar bottom, which was of soil and dry; and he found that they kept best in this way. He has found that all fruit intended for long keeping should be gathered before fully ripe. The flavour is, of course, not so good, but this is more than offset by the increase in keeping quality.

---

Squashes he has kept on the upper shelves of a warm cupboard or laid upon something in a warm room. Pumpkins keep best in a warm, dry place. Beets and carrots and turnips keep best buried in the soil of the cellar bottom or packed in sand. If open to the air they wither and spoil. Potatoes he keeps in bins raised a trifle from the cellar bottom. If there is rot present when digging he sprinkles them freely with air-slaked lime as soon as he gets them into the cellar. This is stated to effectually check the rotting process. Those already affected will dry up and rot no more, and no others will be affected.

---

All cellars for the storage of fruit and vegetables should be as cold as possible without freezing, and should be aired as often as the outside temperature will admit. If inclined to dampness, quantities of air-slaked lime should be placed there in boxes or pails. This will absorb the moisture gases and keep the cellar dry and sweet. As a matter of prudence in regard to health it is advisable to keep lime in the cellar.

---

**Colonial Wood for Matches.**

The suitability of Colonial wood for the manufacture of matches has recently been proved by a local firm, who have sent round sample packets of their matches, which have been made entirely from poplar grown in the Hill Crest district. There is abundant evidence to show that this class of timber can be successfully grown in the Colony, and we have it on the authority of the late Conservator of Forests that the tree will attain a diameter of 12 inches in 20 years and 18 inches in 30 years. The trees from which the matches in question have been made are said to be only from 5 to 6 years old, but the manufacturers consider that this size is too small for economical working, as there is too large a proportion of the centre wasted in the veneering machine. The price offered by the manufacturers for poplar of suitable size is 1s. 6d. per cubic foot, and the annual consumption is estimated at 140,000 cubic feet, equal to 20,000 logs of 7 cubic feet each or 400 logs, per week.

---

**Manufacture of Glucose.**

The transmutation of the baser metals into precious metals was the dream of the alchemists of old. As chemical science advanced, this dream was dissipated, and the modern chemist, while a little venturesome, is generally a modest man. It has been known for nearly a century that glucose only varies from sucrose, or sugar, by one unit of water. To get the water into the combination was the problem. About 1860, in the City of New York, a German chemist, experimenting with maize starch and sulphuric acid, finally produced the modern glucose, we learn from the *Louisiana Planter*, which has now become such a great staple in the United States that a great trust has been formed to take charge of it, and the annual manufacture probably exceeds half a million tons.

---

For some years the manufacture of glucose was considered a losing venture, and it struggled along for more than twenty years before the process became an assured success. The boldest venture of the glucose people was the building of a great refinery in Chicago about 1880, in which it was expected that, under the control of Dr. Baehr, they should make cane sugar by some modification of the ordinary glucose process. A certain amount of sugar was made by this process. It was white, crystalline, and apparently cane sugar, and was said to be the chemical equivalent of cane sugar. The manufacture of this, however, failed of success—on account, it was said, of its costing more to make cane sugar in this way than by natural methods.

---

It is now announced in Chicago that the Corn Products Manufacturing Company contemplate the immediate erection in that city of another great glucose manufacturing and refining plant, the estimated cost of



which will be five millions of dollars. The land for this great establishment has already been secured on the line of the Chicago drainage canal, and it is said the expected capacity of the works the first year will be a loaded car movement of 125 cars per day in and out, which will mean the employment of 750 people. Incidentally it is stated that from 5 to 6 million gallons of water will be needed for the daily use of the establishment, and borings have been made satisfying the management that they can secure an adequate water supply of excellent quality at a depth of some 1,600 feet, which will be done with artesian wells. A storage and transfer elevator of a million and a quarter bushels capacity will be erected and the interior is to be of tile laid in concrete. A rather novel point is brought out in this connection, and that is that the wood work is to be done away with in this new factory, for the reason that the life of a glucose factory is admitted by its builders not to exceed ten years, because of the deterioration of the wood, as affected by the processes in use.

---

### **Telegony.**

The controversy carried on in British papers in regard to the Deceased Wife's Sister Bill incidentally brought up the subject of telegony; and in taking part in the discussion Dr. P. Chalmers Mitchell, a distinguished scientist and secretary to the Zoological Society, wrote to *The Times* (London) as follows.

---

"Some years ago Professor Weismann redirected attention to 'telegony,' and, without explicitly denying its existence, pointed out important theoretical difficulties in the way of accepting it, and insisted on the necessity of careful scrutiny of alleged cases and of extensive experimental investigation. Since then experimental breeding has been conducted on a large scale in the hope of settling the problem, Professor Crossar Ewart, in particular, having made most extensive experiments at Penycuik, using horses, asses, and zebras, and all manner of domesticated animals. The results have been conclusive; not the faintest shadow of a ground has been discovered for supposing the existence of any telegonic influence of a first sire on offspring to a second sire. Scrutiny of the cases alleged by breeders shows that, where these were not mere blunders of observation or report, there was always a simpler explanation. It is quite common for mares with no suspicion of a zebra taint to throw foals with a few zebra-like strippings, and these attract no attention unless, as in Lord Morton's case, the coincidence of a previous mating with a quagga had stimulated interest in them.

---

"The most common cases of supposed telegony occur amongst domesticated breeds, and are simply explained as instances of the appearance of ancestral characters. Where a stock is supposed to be pure, and

there suddenly appears in it aberrant progeny, the owner or breeder is glad to find the excuse of a taint from a previous bad mate of the mother. The pair of white cattle now at the Zoological Gardens in Regent's Park have this year committed the indiscretion of producing a coal-black calf. They come from herds supposed to represent remnants of the original wild white cattle of England, and it is at least certain that the cow at the gardens has had no calves nor opportunity of producing calves to any except a white bull. If she had been previously mated successfully with a black bull, the present black calf to the white bull would be a typical case of the kind of occurrence upon which the suppositions of acquired consanguinity and telegony are based."

---

### ***Pineapples for London.***

The Cape Trades Commissioner in London has supplied a report to his Government on the marketing of South African pines in London, which will doubtless be read with interest by Natal growers: "The price of pines here," he remarks, "depends very much upon their appearance, so much so, that even if a box of pines arrives in a perfectly sound condition, but with shrivelled tops and packed in an untidy manner it would not make half the price as a box of pines packed neatly in wood-wool or mealie cob leaves, of which the tops are green and fresh, though the fruit in both cases may be perfectly sound."

---

He is strongly in favour of the use of wood-wool in packing. "I am convinced," he says, "that the small extra cost will add to the appearance and thus increase the value of the fruit by at least 20 per cent., besides which, wood-wool is an excellent material for packing fruit, as it permits a great deal of ventilation which is essential to the pine export trade; but a few large dealers of pines on the market suggest mealie cob leaves. Remember, not the leaves from the stalks of the mealies, nor the outside rough leaves from the cobs, but the clean white thin leaves covering the cob of the mealie. These leaves should be shredded with the hand before packing, so as to make them thin and pliable, and when farmers are collecting these leaves for purposes of packing fruit, every care should be taken with them that they do not get wet. They must be very dry indeed before using same, and it is in consequence of the danger of the leaves not being dried enough that I am reluctant to recommend them. The fruit should be packed 12 in a single layer box (and two boxes battened together), of a size to fit the fruit, but it is not necessary to put a lid on the lower box, the upper box serving as a lid. I have already tried 12 pines in a box, and think that the following measurements will be suitable: Length, 25 inches; breadth, 15 inches; depth, 6 inches. Outside measurements. The packing must be very tight between the pines, to prevent the fruit from shaking, and the box should have a good appearance, and must not be



made from all manners of scrap wood. Further, to give a neat appearance when opened, after the fruit has been well packed before the lid is put on, a sheet of thin dark blue paper (the kind which boys use for making kites) should be nicely placed on top of the packing. What is usually done by the retailers when they open their boxes, is to remove the fruit and then replace this sheet of paper on the packing and lay the fruit thereon when exposed for sale. The blue paper shows up the colour of the fruit, and makes it more attractive."

---

Speaking of the class of fruit advisable to market, he says: "The Queen pines, which are the smaller variety, are very delicate and less adapted for travelling, and are less known on the market than the other varieties, though as they are largely grown in the Cape, I am, of course, anxious to find a large market for them, and my general remarks apply particularly to these; but the larger pines, known here as the 'St. Michael,' and known at the Cape as the 'Giant Kew,' are much better known on the market here; they have a much finer appearance, they travel much better, and they make very big prices. They should realise during the months of January to May from about 1s. 6d. to 3s. each. Higher prices are frequently paid for those from the Azores, which arrive in very good condition."

---

His opinion as regards prices is that, "if the Cape Queen pines arrive in a good, sound condition, they will make from 4s. to 6s., or perhaps more, per box of one dozen. I have estimated the cost of shipment, and with the information at my disposal, I make it that freight will be 10d.; cost of wood and wood-wool, 8d.; railage and dock dues in South Africa, 6d.; dock dues and cost of selling on this side, 7d.; total, 2s. 7d. per dozen fruit. Of course, this is a minimum calculation. Should the fruit therefore only realise 4s. per box, the growers and packers will have to be satisfied with 1s. 5d. for a dozen pines; but it is quite possible, and may be probable, that the fruit will realise about 6s. per dozen or more; but this, as I have said before, depends upon the condition and the get-up of the fruit upon arrival. I must again state that, should the fruit arrive in a bad or rotten condition, then it is, of course, impossible for me to realise them at a profit, or perhaps to get any price at all for them."

---

### **Co-Operative Marketing of Crops.**

American opinion as to the value of co-operation in the marketing of crops, as reflected in *Experiment Station Work* (U.S. Department of Agriculture), appears to be much in favour of the principle, for we learn that the co-operative idea among fruit and truck growers, having passed the experimental stage, has now become an important factor in marketing.

Scarcely any well-developed horticultural sections of the country, we are told, are without their associations in some form or another. The benefits derived from such organisations are many. Small producers can make combined shipment in truck-loads; and organisations can, through the volume of their business, secure minimum transportation rates. In America these organisations can afford to maintain daily telegraphic communication with all of the important markets, and are thereby enabled to divert consignments already on rail to places where the demand is greatest. Growers are advised when to hold and when to rail. Uniform grades and boxes are secured; and through their associations members can procure packing material, fruit-picking baskets, spraying materials, and pumps, potato bags, etc., at a greatly reduced cost.

---

Co-operative associations have developed rapidly in the Western United States, where in Colorado alone we find thirty fruit and produce organisations of various kinds are doing business. The working of these associations, which is much similar to that of associations in other parts of the country, is described in a recent publication of the Colorado Experiment Station. Two methods of packing and grading fruit are in vogue; in one instance the association does all the packing, the growers delivering the fruit to the packing house just as it is taken from the trees. Here the packers, under the direction of a superintendent, sort the fruit into the various grades, and at the same time pack it into boxes or crates. Each grower is given a number, which is used to designate his fruit throughout the season. As each box is packed it is marked with his number and the grade. When the boxes are loaded into the trucks the number of boxes, the varieties, and the various grades which belong to any grower are kept account of and duly recorded. In this way the price for each box of fruit in any car is easily determined. Where, however, there is a very large amount of fruit to be handled it is impossible for the association to do the packing, consequently the growers assume this work; and here we have the second of the two forms of packing and grading referred to above. With this arrangement the association employs an inspector, whose duty it is to inspect each load as it is delivered. This he does by opening the boxes on the side in the case of apples, when a good estimate of the contents may be made. If the packing is satisfactory not more than two boxes may be opened. If unsatisfactory, several may be examined, and if all run under the inspector's standard, the entire load must either be placed in a lower grade or else be repacked. Each man's fruit is kept account of by numbers, as in the former case. The association charges a commission on all sales—usually 5 per cent.—to defray expenses. In addition, where the packing is done by the association a further charge is made to cover the cost of the box and packing. Any surplus is, of course, distributed as premiums.



Such associations sometimes fail in their purpose. F. A. Waugh, in his book on "Fruit Harvesting, Storing, and Marketing," thus sums up the prime causes of failure: "All classes of farmers are constitutionally and proverbially distrustful of other people and of one another. In a fruit association there arise (such is the experience) the most inveterate jealousies. Each man thinks he is furnishing a better grade of fruit than his neighbour, though all share alike in the profits. Each one fears the other will reap some special advantage somehow. In particular, the appointment of managers, superintendents, supervisors of grading, shipping agents, and all other officials of the company offers a special opportunity for the elaboration of all sorts of neighbourhood quarrels. Each man thinks he ought to be manager, and when one man is finally chosen he is usually suspected of all sorts of favouritism. In any case, he is apt to be hampered in his business relations by committees, boards of directors, and various kinds of red-tape and foolishness. Often he has to consult a committee before taking any important action." Under such conditions an association has not much chance of success; but in order to avoid the rise of such impediments to progress it would be well for local associations to start in a small way, and gradually increase their membership and scope of business as the organisation gains strength. An *Experiment Station Work* remarks, a few selected growers are sufficient to demonstrate to the community the advantages of co-operation. When the volume of the business is sufficient to warrant such a step, the management should be handed over to a man who is specially equipped with knowledge of the details of marketing, and who has no crop interests of his own. He should receive the confidence of the members and be given a chance to work out his own ideas; and his salary should be adequate for the work and responsibility involved.

### **Milking.**

Of late years there has been a greater demand on the part of the public for a pure milk supply, and the chief responsibility in this connection rests upon the owners of cows. It is the duty of those engaged in the production and sale of milk to see that all cows are in good health, and fed in such a manner as to produce sound milk; and some useful hints on the subject have recently been issued by the British Board of Agriculture in the form of a leaflet. Readers are reminded that it is essential that the milk from any cow which is not in perfect health should not be mixed with the general supply of the herd, and this point merits the careful attention of the owner or his foreman. The milk from any cow continually ailing should not even be given to pigs or poultry unless previously boiled, as there is always danger of the transmission of disease. In every herd of cows there are animals which will suffer from ailments of a temporary character. Such cases should be given immediate attention, and their milk for the time should not be used with the rest. Cleanli-

ness is one of the most important items in connection with all branches of dairy work, and no amount of skill in the dairy will counteract ill-treatment of cows and lack of cleanliness in milking, etc.

The use of any organ of the animal body undoubtedly promotes its development, and this particularly applies to the udder, for the process of milking, if carried out thoroughly, increases the milking capacity. To secure the greatest development of the udder, it is necessary that the milking should be carried out very completely, and no milk should be left behind at the end of each operation. There are two reasons for withdrawing all the milk that can be obtained from the udder: firstly, to develop and increase the milking powers; secondly, to obtain the richest portions yielded during the whole of the milking, namely, the "strippings" as they are termed, which contain from eight to ten per cent. of fat, while milk of average quality contains only 3.7 per cent. of fat. Failure to withdraw all the milk from the udder at the time of milking is the commonest cause of cows drying off soon, for a prolonged removal of milk at each milking is effected.

The common method of milking—that of grasping the teat with the full hand and exerting a slight downward pull at the time the hand is closed—is not effective in stripping the cow. Stripping is carried out by the method known as streak milking, in which the teat is taken between the thumb and fore-finger, or fore-finger and middle finger, then lightly pressed and drawn downwards. This method of milking is suitable for the purpose of stripping, as by its adoption practically all the milk from the udder may be withdrawn. It is not, however, advisable for ordinary milking, on account of its being likely to irritate the teat externally, and even in some cases to cause inflammation. It is a vexed question as to which teats should be milked together. By taking, say, the two fore teats, and then the two hind teats, the position of the hands becomes somewhat cramped, but this is, on the whole, the best method. A good delivery of the milk to the pail may be got by grasping a near fore and an off hind teat, and then reversing the order. In the majority of cows, however, the hind teats yield the most milk, and, if one hand is being used to milk a fore and the other a hind teat, the operation is not usually completed simultaneously.

Cases are sometimes met in which cows are very difficult to milk. Cows are frequently so at their first calving, but usually improve with milking or suckling a calf. Occasionally cows may have become difficult to milk owing to the milker having for a lengthened period adopted a severe method of milking, such as the streak method, the result being that persons accustomed to more gentle procedure would find difficulty in milking such animals.



Milking may be performed with either wet or dry hands, in the former case the hands being moistened by drawing on to them a few streams of milk. Many competent persons advocate each method, but, taking all points into consideration, the dry method is the more cleanly of the two, and is that adopted by the best dairymen.

---

The leaflet in question gives the following as the essentials of good milking, viz., that it should be performed—(1) *quietly*: that is to say, the milk should be withdrawn in a manner that will cause no discomfort to the cow; (2) *quickly*: if performed quickly more milk is obtained, for rapid milking appears to be beneficial in increasing the flow; (3) *thoroughly*: the last milk, being the richest, must always be withdrawn.

---

Consideration is also given to the question of the times of milking. The common practice is to milk twice in twenty-four hours; and the more equally the time is divided the more uniform will be the quality of the milk produced. For example, if milking takes place at six o'clock in the morning the next milking time should be as near six in the afternoon as possible. This is easy to recommend, but it must be admitted that it is often difficult to carry out in practice, especially in the case of those farmers who supply warm milk for consumption in towns. Cows like to be fed and milked at regular times. If milking is delayed they frequently become uneasy, and the irregularity may cause considerable depreciation in the amount of milk obtained. Cows which are left too long without milking get very distended udders, and may suffer considerable pain. Very heavy milkers have sometimes to be milked three times instead of twice a day, to relieve the pressure on the udder. Over-stocking, or allowing the udder to become unduly distended with milk by failing to milk a cow previously to exposing her for sale at a market or sale, is a cruel practice. It frequently leads to inflammation of the udder, and often to the loss of one or more quarters.

---

We have before drawn attention to the importance of milk records and milk testing; and reference is made to the subject in the leaflet issued by the Board of Agriculture. It is desirable that those who are anxious to improve their dairy stock should weigh the milk of each cow every morning, and note the yield in a book specially kept for the purpose. Or, if this cannot be done, each cow's milk should be weighed morning and evening one day a week and multiplied by seven at the end of the milking period. This would give the approximate total. The daily record, however, is to be recommended. In conjunction with the record of the weight of milk yielded by each cow, at least an occasional test for the amount of butter-fat present should be made. The value of such

records, which show both the quantity and quality of milk of individual cows yielded during their lactation period, cannot be overestimated. The value of the increased yield of the herd year after year, consequent on the judicious weeding out of inferior animals, well repays the small additional expense of the work entailed in making such records.

---

### **Bananas versus Plums in England.**

The abundant crops of plums which have been experienced in England during the past season have been the cause of a discussion, carried on in many newspapers, as to the relative food value of this native fruit compared with the imported banana. This discussion has chiefly centred round the Victoria plum and the Canary banana. According to the *Agricultural News* (Barbados), a well-known West of England paper has taken a prominent part in debating the question, and has advanced in its columns a mass of figures and arguments in support of the assertion that English plums are 50 per cent. cheaper, on the basis of their nutritive properties, than Canary bananas, and also far better adapted for English consumption from a health point of view, than the imported fruit. Plum growers, it is urged, should adopt the methods which have been utilised with so much advantage by banana producers and dealers, and by the judicious dissemination of literature impress upon consumers the nutritive value of the home-grown fruit. By this means, it is hoped, English plums will largely displace bananas on the home market.

---

Without wishing for a moment to disparage the qualities of the delicious English plums, it is obvious that, as the *News* remarks, there is no comparison between this fruit and the banana as regards food value. The latter contains nearly ten times the amount of albuminous constituents possessed by the plum: it also contains more than ten times the amount of sugar, and rather more mineral matter. The nourishing properties of the banana have been long recognised in England, and the fruit has come to stay. Further, the uncertain nature of the English plum crop, and the fact that this fruit is available in its fresh condition for only a short period of the year, give it no chance of displacing the banana, which can be obtained in fresh supply from January to December.

---

A special wire to the *Natal Mercury* states that Mr. Charles Howie writes to the Press from Paris that Cape apricots are selling in Paris at one franc forty cents, or about 1s. 2d. each, with a good demand.





SCHOOL OF AGRICULTURE, CEDARA.



## **Tobacco Cultivation in South Africa.**

WITH SPECIAL REFERENCE TO NATAL.

By E. R. SAWER, Director Experiment Stations.

### VII.—FIELD MANAGEMENT.

*Cultivation.*—In the latter stages of growth the tobacco plant offers considerable resistance to the wind, and additional support to the root system should be provided by lightly moulding or earthing up the crown of the plant. This is best effected by setting the tines of the horse hoe to draw the earth from between the rows towards the plants. By the same means the roots, which will otherwise frequently become exposed, are covered and protected from the sun. Care should be taken, however, to avoid injuring the spreading roots by deep cultivation, and the drying out of the soil by pronounced ridging. The double shovel plough has been used for this purpose, but the horse hoe pulverises the ground better, and destroys a larger proportion of the weeds. Unless check-rowing be practised, it will further be necessary to hand hoe the lines, breaking down the ridge between the plants and drawing the earth towards the individual crowns. During dry weather constant cultivation is necessary to the preservation of moisture, and no effort should be spared to keep the weeds in check.

*Suckering.*—In dry weather suckers will early appear at the junction of leaves with stem, and should be removed at once. Topping is the signal for a sudden burst of these secondary branches, which, unless removed, draw away the sap from the main leaves, rendering the latter papery and of little commercial value. Suckers should be regularly removed as soon as they are large enough to be conveniently grasped. They will snap off readily in the early morning or in wet weather, but will be found tough and leathery in the afternoon of a hot dry day.

When a ratoon crop is required for the kafir trade, it may be advisable on the occasion of the last picking to leave the two suckers springing from the foot of the main stem to develop after the first crop has been harvested. It is sometimes difficult to get suckers to grow from the lower part of the plant, but if all the upper suckers are kept off, growth will usually start from the foot.

*Priming.*—Despite the greatest care, the lower leaves will almost inevitably be damaged by cultivation and rain splashing. They are also the seat of mould infection, and it has been found a good practice to remove three or four from the foot of the plant and leave an additional



number above when topping. In this way a free passage of air under the plants is secured and a larger proportion of undamaged leaf obtained.

*Topping.*—When the entire plant is harvested and the leaf cured on the stalk, even ripening is very essential to good results. To secure this uniformity it is necessary to remove a length of stalk and the attached leaves from the top of the plant. The time chosen for this operation is when the flower head or inflorescence has begun to develop and further leaf formation is at an end. Considerable experience is necessary to the successful conduct of this work. Examination of the mature plant will show that the leaves are progressively larger from below upwards until the seventh or eighth is reached: the next four or five are about the same size, while those above become gradually smaller until just below the flower head they are little more than rudimentary scales. As the upper leaves are not fully developed at the time when topping becomes necessary, the planter will be guided by the apparent vigour of the plant in determining the point at which the break should be made, allowing for any priming of lower leaves which may have taken place.

Certain types of tobacco are harvested, or “primed,” leaf by leaf, as in the case of Turkish and certain cigar tobaccos, and the same necessity for topping does not here arise. It has been found, however, in the latter case that if this operation be neglected and the flower head allowed to mature, pollen and falling scales adhere to the gummy leaves, spotting them and rendering them valueless for wrapper. The head further absorbs nutriment which should go to the leaves, and the development of the latter is checked. On the other hand, when a mild, delicate and finely flavoured cigarette leaf is desired, the presence of the flower head may be even an advantage, and in practice is not removed from the Turkish plant.

*Harvesting.*—Maturity of the individual leaves is indicated by a crinkling of the blade, not unlike that seen in the Savoy cabbage, though less pronounced; by a blotchy, yellowish discolouration; and by a brittleness of both leaf blade and the main stalk. If the lamina of the mature leaf be pinched between finger and thumb, it will crack across. Maturity will be reached some three or four weeks after topping, and some ten to twelve weeks from transplanting, when soil and climate are favourable to rapid development. The lower leaves naturally ripen first, while the upper are still green, and a nice discretion must be exercised when the entire plant is harvested, to obtain the greatest possible proportion of leaf in a condition favourable to satisfactory curing. As a general rule, it may be stated that when the inner or lower halves of the uppermost leaves afford the above-mentioned indications of maturity, the crop should be harvested without delay, or it will be found that the lowest leaves will turn yellow, dry up at the point, and drop off. Priming, or the harvesting of the crop leaf by leaf, is in all respects, save that of expense, very pre-

ferable and should be employed for all highly priced leaf, such as Sumatra wrapper, Turkish and the better classes of Virginian cigarette leaf.

*Cutting.*—When the crop is primed, three or four leaves, commencing with those at the bottom, are taken from each plant at the first cutting, and after an interval of a week a second priming is made. In this way leaves both of more uniform maturity and size can be secured than when the plant is cut, and for cigar wrapper this is a consideration of the first importance. Different primings should be kept separate in the curing barn so that they can be fermented separately. The leaves should be carried in baskets to the curing shed, where they are threaded to the number of 30 or 40 on a string, care being taken to place them face to face and back to back to prevent curling. Leaves of an approximately uniform size should be placed on the same string, as if of uneven dimensions, they will inevitably curl when curing. The ends of the strings are then attached to five feet laths, and the latter placed on the tier poles, commencing with the uppermost tier in the roof of the barn. The work of filling the building should be completed with the least possible delay, as the addition of green tobacco to half-cured leaf is very undesirable. It is usual to make five or six primings of a crop, occupying a period of about six weeks, while the average period of curing for primed tobacco is from fourteen to eighteen days. A second barn, or a division of the original barn, is therefore of great assistance.

The price realised by the ordinary grades of pipe leaf does not warrant the additional expense involved in priming the crop, and the entire plant is in such cases to be harvested. When ripe the stems are chopped through at ground level and split lengthwise with the hatchet. This operation is best performed in the afternoon when the leaves are tougher and less liable to damage. Cutting should never be done while the leaves are wet with dew or rain, as spotting would in such case inevitably ensue. The plants are laid on the ground or hung on scaffolds to wilt for twenty-four hours or longer as experience may dictate. They are then strung to the number of four or five on pointed laths by means of the split in the stem, hauled to the barn and hung in similar fashion to the primed leaf.

#### VIII.—CURING, FERMENTING AND AGEING.

From the moment the tobacco plant or leaf is cut in the field a series of chemical changes and reactions set in, which have been technically divided into three stages known respectively as “curing,” “fermentation” or “sweat,” and “ageing.” The planter should disabuse his mind of the idea that the curing of tobacco is a simple process of drying. The quality of tobacco is certainly determined during growth, but the best tobacco may be absolutely ruined by lack of skill and control in the curing process. The yellowing of the leaf, which is indicative of the gradual

death of the living cells, is accompanied by the multiplication and increased activity of certain organic ferments, known as "enzymes," present in the tissues. As long as the cells of the leaf are alive there is a circulation of organic matter, accompanied by the formation and consumption of sugar derived from the starch originally present. Further vital changes take place during the second stage, or "sweat," resulting in the development of aroma and the elimination of a large proportion of nicotine and other undesirable products. The point of importance, however, is the fact that such changes are dependant upon the extensive development of enzymes during the curing process, and that when the plant is slowly starving to death, as it is when it is cut and allowed to dry, there is a rapid formation of enzymes, whereas if the leaf be killed by heat or rapid drying no such formation will take place, and fermentation will be a partial or total failure. In other words, the success of fermentation depends absolutely upon the care with which the earlier process of curing is conducted, and this relationship between enzyme formation during curing and the subsequent changes during fermentation is the keynote to all systems hereafter described. A plant cell which is being gradually murdered acquires a large stock of enzymes: when death is rapid, there is but little development of these compounds. Slow murder is in the majority of cases essential to satisfactory results, and the planter must have perfect control of heat, light and moisture in his curing barn, and so manipulate these as to cause the death of the green cells of the leaf by gradual starvation. "The more this process of gradual death of the living cells of the leaf can be prolonged without inducing the development of mould, rot and pole burn, the better will be the quality of the finished article. Sudden changes of temperature are injurious to the leaf."

*Air-Curing.*—The varying types of tobacco and the different purposes for which they are grown give rise to a need for several distinct methods of curing. Each method of curing further calls for a certain type of building, and the success of a tobacco industry, worthy of the name, depends upon the possibility of providing the required facilities. The cattle kraal, the stable and the open iron shed are a serious handicap, if alone available, to the planter, and afford none of the conditions necessary to the production of a high grade leaf of uniform character, which will alone find a permanent footing on home and foreign markets.

To satisfactorily air-cure tobacco perfect control of ventilation is a first essential. During the prevalence of drying winds it should be possible to render the building practically air-tight, and thus prevent too rapid dessication and green-curing. In wet weather, on the other hand, a free current of air should be secured to obviate possible loss of the bulk of the leaf from mould and pole burn. The provision of a hot-air flue, communicating with an outside furnace and carried through the length of



the building is a safeguard well worthy of adoption, to which may further be added a small low pressure boiler and perforated steam pipe for the addition of moisture to the atmosphere during very dry weather. This combined appliance gives the planter almost perfect control in a suitable building of temperature and atmospheric moisture.

As already stated, rapid changes of temperature are very prejudicial, and iron consequently is a very unsatisfactory material for construction of the barn. The planter will be guided in his choice from such alternatives as grass, wood and brick by local costs, available labour and other individual considerations. For some years the heavily thatched barn carried on native poles was in vogue in South Africa, but rapid destruction by borer, the harbour afforded to all kinds of insect pests and fungoid diseases, the ever-present danger of fire and similar considerations have secured preference for the more expensive but infinitely more satisfactory brick or frame building. An iron roof is only permissible when lined with felt or other non-conducting material, or, as an alternative, thatched with grass. The dimensions of the barn will be determined by the size of the crop to be handled, and all the leaf in one building should be at the same stage of curing. Width and height may be fixed factors and the length governed by the amount of tobacco grown. An elevation of, say, thirty feet is a profitable limit to which to raise the tobacco, and a similar dimension in width will allow of thorough through ventilation. To secure the greatest storage capacity the side walls should be carried up to sixteen feet from the sills to the plate, while the roof should have a vertical elevation of thirteen feet from the plate to the ridge pole. It is then possible to give the tier poles carrying the tobacco a spacing of four feet, so that there are four tiers to the plate and two above. If the leaf be primed, double the number of tiers will be required. With a vertical spacing of two feet, the additional number being constructed of heavy wires, which can be detached as occasion demands. The lowest tier in the centre line of the barn should be omitted to allow of a free passage from end to end. A double series of ventilators above sills and below plates respectively should be constructed with shutters composed of one board hinged on the upper side, and the manipulation of the barn will be determined by the character of the tobacco and the prevailing weather conditions. During hot and dry weather the ventilators should be tightly closed to conserve atmospheric moisture, and opened at night to allow entry to the cool and damp night air. After heavy rains, on the other hand, continual ventilation or the use of the hot-air flue will be necessary to prevent mould and rot. Failing the latter convenience charcoal or mealie-cob fires should be started and maintained until the excessive moisture is removed. The best results are obtained when it is found possible to allow the tobacco to become alternately soft and dry once in every twenty-four hours, or, in other words, to 'come into condition' during the

cool hours of the early morning. Rapid curing causes the fixation of the green colour, renders the fibre woody, prevents the formation of enzymes and consequently the desired changes during fermentation. Excessively prolonged curing, on the other hand, makes the leaf spongy and tender. Curing is completed when the mid-ribs of the leaves have dried and crack between the fingers.

*Flue-Curing.*—There is a large and ever-growing demand for a bright yellow, mild and sweet-flavoured tobacco both for the manufacture of cigarettes and for blending with the heavier grades of pipe leaf. For many years the Virginian and Maryland types were almost exclusively cultivated for this trade, but of late the White Burley with its heavier yield, mild flavour and bright colour has come into great favour. A distinct system of curing is adopted for this yellow tobacco, which includes the employment of artificial heat. A special barn, smaller in size than that employed for air-curing, and provided with a relatively large flue surface and furnace, is necessary to the work. The prime object in view is the bright yellow colour demanded by the market, and aroma is of less importance. In this case therefore the destruction of the enzymes by intense heat and rapid curing is permissible, and such destruction is proved by the fact that flue-cured leaf, if placed in a moist condition and bulked, as are cigar and pipe tobaccos, will not ferment, but decay. No other type of tobacco or system of curing requires as much skill and experience before successful results can be regularly obtained. The least misjudgment in the temperature applied will reduce a barn-full of the finest leaf to a very inferior grade. The prices offered for the different classes of Bright tobacco are, however, sufficient to compensate for the slight risk attendant on this method when the necessary skill has been once acquired. No definite rules can be offered, for experience of individual barns and types of leaf is a factor of importance.

When the barn is full, and either primed leaf or the entire plants may be thus cured, the upper ventilators are closely shut and the fires started. A temperature of 85 degrees F. should be secured and maintained for eighteen hours or until the leaf commences to yellow. If this process be unusually protracted water should be sprinkled on the floor, or steam introduced from a boiler to hasten colouration. During this time the temperature must on no account be allowed to fall below 80 degrees, or rise above 90 degrees. When the leaves show a bright lemon colour, it may sometimes be well to open ventilators for an hour or two. This should be done at all times if moisture collects in beads on the leaf. After this airing, the barn is again closed and the temperature gradually raised to 100 degrees, and held at that point for six hours. Additional heat is then gradually applied at the rate of 2 degrees an hour until 110 degrees is reached, at which point it is held for three hours, and then again increased by 5 degrees an hour to 125 degrees, and held thus until blade

of leaf is dry, but stem still supple and moist. The doors and ventilators should then be thrown open to allow all free moisture to pass off. As soon as this is accomplished the barn is once more tightly closed and the heat raised by 5 degrees an hour until 140 degrees is registered. Where priming has not been practised and the entire plant has been hung, it now becomes necessary to cure the stalk by raising the temperature to 175 degrees, at the rate of 5 degrees an hour. On no account must the heat ever exceed 180 degrees or the dry leaf may catch fire. The maximum should be maintained until the stalk is thoroughly dry, which will take about six hours. The doors and ventilators may then be opened, the fires drawn and the barn allowed to cool off.

The construction of the flue-curing barn is very simple, the building being erected with brick or stone to inside dimensions of 16 ft. x 16 ft. x 17 ft. A cupola ventilator at the ridge and four rabbit hutch ventilators on the sills should be provided. The roof should make an air-tight join with the plant, and be lined with felt to prevent any possible draught. Care must be taken that no apertures exist at any point through which heat or moisture can escape. The arrangement of tiers and poles is the same as that adopted for air-curing barns, except where primed Turkish leaf is to be handled. In this case a vertical spacing of twelve inches between tiers will suffice. Up to this point the building is practically a small air-curing barn and may be used as such. The addition of the flues changes the character of the building. These are constructed of heavy black Russian iron piping, the length nearest the furnace being heavier than the remaining sections. The furnace is simply a large brick arch built outside to the right of the door, and the flue leads from this practically at floor level, runs round the building at a distance of four feet from the wall, and comes out through the same wall and on the other side of the door. A length of flue half the height of the building is sufficient to carry the smoke away. Such a building, which has been constructed at Weenen at an outside cost of £100, will cure an acre of tobacco each week during the season.

*Sun-Curing.*—This method, which is little used in America, has been successfully adopted for Turkish leaf in Southern Rhodesia. The primed leaf is hung on racks in the sun, care being taken that it is sufficiently shaded during the wilting period to prevent sun burning. Protection from wind and rain is also desirable and may be afforded by the construction of open shelters similar to those employed for the drying of wattle bark in the wet season. The sticks of tobacco are placed on wires in the open, and slipped along these under the adjacent roof at the approach of wind or rain. The leaf resulting from this treatment is very sweet and sugary, which renders it highly susceptible to the attacks of mould, so that the greatest attention to handling and storing is necessary..

*(To be continued.)*



## ***The Cultivation of Camphor.***

### **A POSSIBLE INDUSTRY FOR NATAL.**

LITTLE or no attention seems to have been paid in the past to the cultivation of the camphor tree in Natal for commercial purposes; although, from what we have gathered, there are districts on the Coast to which it is suited and where its cultivation might profitably be undertaken.

The camphor market is largely supplied by Formosa; and since the acquirement of this island by Japan, the latter country has, it is stated, been regulating the supply from the Formosan forests so as to keep up the price. This fact, coupled with the restricted sources of supply and the increasing use of the products of the camphor tree, has naturally tended to the establishment of a higher level of prices, which is being seriously felt in certain lines of industry. Before the invention of celluloid and of smokeless powder, in the manufacture of both of which camphor is essential, no such prices for the raw material had ever been recorded as now prevail. An English writer has compiled figures running back to the time when camphor was purchasable at one-eighth of the present price.

It is stated that the Japanese have succeeded, in competition with European and American refiners, in producing refined camphor of such quality that they may in time control the whole situation by allowing no crude camphor to be exported. This has led to serious attempts, particularly in Germany and France, to produce a substitute for camphor. These, however, do not appear to have yielded important results as yet. It is suggested that another means of escape from the Japanese monopoly may exist through the cultivation of the camphor tree, which is about to be encouraged in a practical way by the Government of Madras, in India. It is asserted that the tree will grow there, and Mr. J. McKenzie, of Prospect Estate, Nedivattam, is the first to obtain from the Government special favours in consideration of planting 60 acres in camphor. Cultivated trees are expected to yield camphor within five years.

### **USES OF CAMPHOR.**

It will not be here out of place to give a short enumeration of the principal uses of the products of the camphor tree. Camphor is employed extensively in medicine. It enters into the composition of many kinds of liniments for external application. For liniment it is used especially in combination with olive oil. It is taken internally for hysteria, nervousness, nervous headaches, diarrhoea, and diseases affecting

the alimentary canal. It is a specific in cases of typhoid fever and cholera. Camphor fumes have been used with success in cases of asthma. It has been used very extensively to keep insects out of furs, woollens, etc. In Japan, camphor and camphor oil are used in lacquer work. The oil is somewhat similar to turpentine, and could doubtless be used to advantage in varnishes and shellacs. It is now used in the manufacture of toilet soap. In Japan and China it has been used for illuminating purposes, but it produces a smoky flame.

Among the secondary uses of the camphor tree the most important is for ornamental planting. Its bright evergreen leaves, rapid growth, and long life make it valuable for this purpose. In Japan and China it has been the principal tree planted in the temple courts for many centuries, and in these countries it takes the place of the historic oaks of England. It has been extensively introduced into Southern Europe and South America for ornamental purposes. The wood, with its close grain, yellow colour, and susceptibility to polish, taking a kind of satin-like finish, is exceedingly valuable in cabinet work, especially for making drawers, chests, and cupboards proof against insects. The leaves and young branches, although they have but a slight odour of camphor, are packed with clothing or scattered about unused rooms to guard against insects.

The tree produces an abundance of berry-like fruits, which are used in Japan and China to make a kind of tallow. The fruits are greedily eaten by chickens and birds.

#### COMMERCE.

The total export of camphor to Europe and America is something like 8,000,000 lbs. per annum. We are not in a position to give detailed figures of the imports of crude camphor into Great Britain, but the following statement of imports into the United States (for which we are indebted to the *India Rubber World*) will prove instructive:—

| Year.              |     | Imports.<br>Pounds. | Value.<br>Dollars. | Av. per<br>Pound. |
|--------------------|-----|---------------------|--------------------|-------------------|
| 1892-93            | ... | 1,733,425           | 446,548            | 25 6 cents.       |
| 1896-97            | ... | 1,496,587           | 332,745            | 22 cents.         |
| 1903-04            | ... | 2,472,440           | 874,665            | 35·3 cents.       |
| 1904-05            | ... | 1,904,000           | 638,744            | 33 5 cents.       |
| 1906-07 (8 months) | ... | 1,580,527           | 759,004            | 48 cents.         |

It may be stated that crude camphor enters the United States free of duty, and that refined is dutiable at 6 cents (3d.) per pound.

#### CULTIVATION IN NATAL.

The present high prices of camphor and camphor products justify the assumption that this may prove a profitable cultivation in Natal; and with a view of placing before readers all available information with

regard to the cultivation and production of camphor, we have prepared the present article. In the preparation of this article we have consulted the following authorities, from which we have extracted much useful information: Watt's *Dictionary of the Economic Products of India*; Circular No. 12 of the Division of Botany, U.S. Department of Agriculture; *Circular* of the Royal Botanic Gardens of Ceylon, I. 24 and IV. 3; as well as notes in current periodicals.

We should be glad to receive and publish the experiences of any of our readers who may have experimented with trees already growing on the Coast, as well as views on the possibilities of camphor production in Natal.

---

#### BOTANY AND HABITAT.

---

The name "Camphor" is applied to various concrete, white, odorous, and volatile products, all of vegetable origin and possessing similar properties. They would appear chemically to be secondary formations from the volatile oil of the particular plant from which they are derived. A number of plants belonging to widely different families are accordingly found to yield this substance. Of these, however, three may be regarded as important, but only one of these commercially so at the present day.

Common, Formosa, Chinese, or Japanese Camphor is the product of the Camphor Laurel, *Cinnamomum camphora*, Nees, of the natural Order *Laurineae*. The camphor tree is an evergreen, related to the bay and to the sassafras of the United States. In its native habitat it attains a height of 60 to 100 feet, with wide-spreading branches and a trunk 20 to 40 inches in diameter. The leaves are broadly lanceolate in form, acuminate at both base and apex, of a light green colour, smooth and shining above and whitish or glaucous on the under surface. The lower pair of lateral veins are more prominent than the others, but the leaves are not as distinctly 3-nerved as those of the cinnamon and many other species of the genus. The small white or greenish-white flowers are borne in axillary racemes on shoots of the previous season, and are followed some months later by berry-like, one-seeded fruits about three-eighths of an inch in diameter. The fruiting pedicels terminate in a saucer-shaped disc, persisting after the mature fruit has fallen.

The camphor tree is native in the coast countries of Eastern Asia from Cochin China nearly to the mouth of the Yang-tse-Kiang, and on the adjacent islands from the southern part of the Japanese Empire, including Formosa and the Loocho Islands, to Hainan, off the coast of Cochin China. Its range also extends into the interior of China as far as the Province of Hupeh, about 500 miles from the coast on the Yang-tse-Kiang in latitude 30 deg. north. This area, extending from 10 deg. to 34 deg. north latitude and from 105 deg. to 130 deg. east longitude,



is all embraced in the eastern monsoon region, which is remarkable for abundant rains in summer.

Notwithstanding the comparatively narrow limits of its natural environment, the camphor tree grows well in cultivation under widely different conditions; and it has been successfully cultivated in India, Ceylon, Egypt, Madagascar, Australia, United States, and elsewhere.

### KINDS OF CAMPHOR.

As already indicated, there are several kinds of camphor. In addition to the ordinary camphor of commerce, there is what is known as Barus, Bhimsaini, Borneo, or Malay camphor, the product of *Dryobalanops camphora*, Colebr. (*D. aromatica*, Gaertn.), a large and handsome tree (met with in the north-western coast of Dutch Sumatra from Ayer Bagnis to Barus and Singkel, also in the northern part of Borneo and in the Island of Labuan), belonging to the natural Order *Dipterocarpeae*. This camphor is slightly heavier than common camphor, and is highly prized by the natives of India and China, who purchase the entire very small produce at fancy prices, from 100 to 200 shillings per pound. To obtain this substance, the trees are felled and completely destroyed, being cut up into small splinters in the search for the camphor crystals. It is stated that only about one-tenth part of the trees thus ruthlessly destroyed is remunerative. The crystals of camphor are chiefly found in the interior of the stem, often existing in concrete masses, which occupy longitudinal cavities or fissures in the heart of the tree, from a foot to a foot and a half long. More frequently they fill the hollows and interstices within the timber, especially in the knots and swellings formed where branches issue from the stem. The old trees are generally the most productive; an average tree is said to yield 11 lbs. In addition to occurring within the wood, the camphor is also found in a concrete form underneath the bark.

A third form of camphor is that known as Blumea or Ngai, which is prepared in China chiefly at Canton and in the Island of Hainan, from a member of the *Compositae*: *Blumea balsamifera*.

In addition to these three sources, the chemical substance camphor can be, and is to a limited extent, also prepared from a number of other plants, among which the following may be enumerated: tobacco camphor, produced by distilling tobacco leaves with water; camphor of thyme, a crystalline product of the fractional distillation of the essential oil of thyme—*Thymus serpyllum*; Patchouli camphor (a substance known in perfumery and homologous with Borneo camphor); prepared from *Plectranthus* or *Pogostemon Patchouli*, two herbaceous plants both members of the *Labiatae*.

---

HISTORY.

---

It may not be out of place to say something here of the history of camphor. The authors of the *Pharmacographica Indica* state that there is no evidence that this substance was known to Europe during the classical period of Greece and Rome. The first mention of the substance occurs in one of the most ancient monuments of the Arabic language, the poems of Imru-i-Kais, a prince of the Kindah dynasty, who lived in Hadramaut in the beginning of the sixth century. About this period no mention occurs in Chinese writings of camphor, although the tree was well known and the timber described. In the thirteenth century Marco Polo saw forests in Fokien, South-Eastern China, of the trees which give camphor. It was not, however, until Garcia de Orta, in 1563, pointed out that the camphor of Europe came from China, that the existence of the two forms of camphor became known. The early Arabian writers all clearly refer to the expensive camphor of the Malaya, which, even at the present day, is a hundred times more expensive than that of China. In the sixth century Borneo camphor was regarded as the rarest and most expensive of perfumes.

Dr. Watt considers that the uniformity of the name Camphor, or some transparent derivative from a common root, shows that the substance was procured originally from one place, and it seems abundantly demonstrated that the camphor first known to the world was that obtained from *Dryobalanops camphora*, and not the camphor of modern commerce, which is prepared from the wood of the camphor laurel tree.

---

CULTIVATION.

---

Camphor plants are best and most easily cultivated from seeds, and the resulting plants are stated to be generally more vigorous than when propagated by other means. The seeds do not keep well, and should be sown as soon as possible after ripening. They should be soaked in water (luke-warm when poured on) for 24 hours before sowing, with occasional stirring. The best seeds, being heavier, will sink to the bottom, and those should be sown thinly by themselves, *i.e.*, about 1 to 1½ inches apart each way; the others may be broadcast thickly, as only a few will germinate.

It must not be taken for granted that when the seeds are soaked in water those that sink have every chance of germinating if looked after properly in the nursery. The objects of soaking the seeds are: (a) to facilitate germination of the good seed, and (b) to separate the light seeds from the heavy seeds. The light seeds consist mostly of nothing more than a shell, and of course will not germinate. The heavy seeds by sinking indicate that they possess the parts necessary

for growth, but all or one of these parts may have become injured in some way and yet the seed sinks on account of its weight. This is often the case, but by taking a sample from the sunken seed and carefully examine it, one is able to form a very fair idea of the general condition of the bulk. The inside of a good seed should be white, and the embryo should be perfectly developed; if it is brown or black it is certain to be bad.

About 5,600 seeds go to the pound, for which a space of about 4 square yards is necessary.

The nursery beds should be of as good soil as possible, well prepared by deep digging, well drained, and free from drip off trees; the soil must be broken to a fine tilth, and have sand added if insufficiently porous. This is important, as it is found the seeds take anything from seven weeks to 5½ months to germinate, and they would be liable to rot if the soil held too much moisture. The soil should be 6 to 9 inches deep. A layer of good sharp sand one inch thick should be laid on the surface. Fern fronds stuck in close together make excellent shading. Watering must be carefully attended to: if too much is given the seedlings will damp off, while too little will result in the germs drying. The Japanese advocate covering the seed beds after sowing and before shading with a thin layer of chopped grass, which is to be recommended if fine grass be obtainable, as it helps to retain moisture (rendering the necessity of watering less frequent, which is a great consideration), keeps down weeds, and affords a protection against wash and strong sun. Heavy rain or watering often causes seeds to appear on the surface of the beds; these should be pushed in to the proper depth and be re-covered with soil, or have fresh soil sprinkled over them. As a protection against hot sun and heavy rains it would be well to put a roof of thatch over the beds in the form of a shed, but it should be constructed with open sides to allow of the admittance of plenty of light and air. A shed 4 feet wide, with a lean-to roof on stout posts, open at the back and front, will be found a useful size. The posts should be 6 feet high in front and 3 feet 6 inches at the back. The roof may be thatch, shingles, or other light material. If more than one is required, a space 4 feet wide should be left between the sheds to give room for watering, weeding, and general attention.

#### PROPAGATION BY CUTTINGS.

The best material for cuttings is that from straight, healthy, and well-matured shoots of the current year's growth, not too soft or too hard. If too hard they will not root readily, and if too soft they will be liable to damp off. The cuttings may be of any size from the thickness of a lead pencil to ¾-inch in diameter. They should be cut into lengths of from 6 to 9 inches. A clean cut with a very sharp knife immediately below a joint to form the base of the cutting is of the greatest importance. If the cut portion is torn or jagged, or too far away from the joint, it is almost certain to decay, though it may remain green for a long time.



The operation for inserting the cuttings is best done by opening a trench with a sharp spade so as to form a straight edge. The prepared cuttings should be laid against this and the soil pressed firmly around them. They should be placed in rows 9 to 12 inches apart and 3 inches apart in the rows, and at a sufficient depth to leave only two or three buds above the surface.

The sooner the cuttings are prepared and put in after being taken from the trees the better. After the cuttings are put in, the beds should be watered to settle the soil: and, if in the open, they must be carefully shaded and sunlight must be only gradually let in as they become rooted and can bear it. If all goes well they should be rooted in from two to three months, but they will not be ready for planting out for three or four months.

#### PROPAGATION BY LAYERS.

Camphor may also be propagated by layers. This method is said to be usually successful, though very slow. A layer is a branch or shoot which is made to give off roots by introducing it into the soil without severing it from the parent plant. The operation of layering is very simple. The shoots should be bent down to the soil. The branch at the bend should be cut half-way through, then a cutting made upwards along the centre of the stem for about  $1\frac{1}{2}$  to 2 inches, so as to form a tongue. The cut portion must be kept apart by a slight twist, or by placing a piece of brick or a small stone in the cleft. The shoot should be pegged down firmly into a groove made in the soil for its reception and covered with soil. The end of the shoot must be kept upright by tying it to a stick.

This method is known as tonguing or heeling, and is said to be the best for camphor. All buds that will be under the soil should be rubbed off before the shoot is laid down. The sap will be able to ascend by the upper side to the leaves, while the elaborated sap will return partly to the stem and partly to the extremity of the incision, where it will be checked, and, having accumulated, will break out into roots. When sufficient roots have been emitted to support the new plant it may be severed from the parent and planted out.

The reason for making the cut just below a bud is that when a shoot is cut above a bud it is apt to die back to the next bud.

#### CONDITIONS FOR SUCCESSFUL CULTIVATION.

For most of the secondary purposes (*e.g.*, ornamental planting), the camphor may well be cultivated wherever it can be made to live; but for commercial distillation, and for the production of wood for cabinet purposes, it must be grown under the most favourable conditions. The minimum winter temperature should not be below 20 deg. F., and this minimum should be of rare occurrence. The soil, preferably sandy and well drained, should be irrigated unless there are abundant rains. Fifty

inches of water during the warm growing season is desirable, and much more may well be used where the air is very dry.

An abundance of plant food, rich in nitrogen, is required for rapid growth, but the kind of fertiliser that can be most profitably applied will vary according to the character of the soil in each locality. In the absence of definite information in this regard, the kind of fertiliser producing most rapid growth of wood in the orange or in other fruit trees may be taken as an index. A report (published in the *Circular* of the Royal Botanic Gardens, Ceylon), on analysis of camphor soils taken at Hakgala, in Ceylon, stated that "the chief mineral ingredients required by the camphor plant for the growth of leaves are lime and potash, an average yield of prunings removing 196 lbs. of lime and 87 lbs. of potash, which could be returned to the soil after the distilled wood had been burned for fuel purposes."

#### PREPARATION OF THE CAMPHOR.

As soon as the plants have reached a fair size and formed stout woody stems below—say in three years or less in very good situations—they may be clipped. The simplest method will perhaps be to use hedge shears, placing a long basket below the bush to catch the clippings. Only the leaves and young twigs are required; woody twigs yield little or no camphor. In Japan, where, however, they only use the wood of full-grown trees as a source of camphor, the chips of wood are distilled in a primitive-looking but effective still, with bamboo tubes (these have the advantage that they can afterwards be split to remove any camphor from them) and a wooden condenser with water running over its lid. According to Watt (*Dict. Econ. Products of India*) Dr. Dymock gives the following account of the process of purification as practised in Bombay: "The process of resublimation is a peculiar one, the object being to get as much interstitial water as possible into the camphor cake. The vessel used is a tinned cylindrical copper drum, one end of which is removable; into this is put 14 parts of crude camphor and  $2\frac{1}{2}$  parts of water; the cover is then luted with clay, and the drum, being placed upon a small furnace made of clay, is also luted to the top of the furnace. In Bombay four of these furnaces are built together, so that the tops form a square platform. The sublimation is completed in about three hours; during the process the drums are constantly irrigated with cold water. Upon opening them a thin cake of camphor is found lining the sides and top; it is at once removed and thrown into cold water. Camphor sublimed in this way is not stored, but distributed at once to the shopkeepers before it has had time to lose weight by drying. It is sold at the same price as the crude article, the refiner's profit being from the introduction of water." This same process is followed at Delhi and at a few other cities in India, but the method is crude and unsatisfactory, when the purified article is compared with that imported into India from Europe.

The European process of refining camphor was long kept a secret, and towards the end of the seventeenth century the entire camphor of Europe had to be sent to Holland to be sublimed. A monopoly was also held for some time in Venice, but at the present day camphor-refining is largely accomplished in England, Holland, Hamburg, Paris, New York, and Philadelphia.

As the distillation of camphor is a somewhat uncertain operation, especially to the beginner, and as it is probable that more efficient methods will be discovered, the details of some experiments which were tried in Ceylon may be found of value. Material for these experiments was obtained from the Gardens at Peradeniya (1,600 feet), Hakgala (5,600 feet), and Anuradhapura (300 feet).

The first distillations were from 112 lbs. of prunings received from Hakgala. These were conducted in a large cask fitted with a metal cover leading to a metal condenser which was cooled by a constant flow of water. Distillation was effected by means of steam from a boiler, passing into the lower part of the cask below a perforated iron plate. The prunings were chopped up into fragments about one inch long, covered with water, the top, connected with the condenser, luted on, and steam turned on to gradually bring the water to the boil.

A strong pungent smell of camphor and eucalyptus came off as soon as distillation commenced, which persisted for some time even when the distillate was cooled to 50 deg. F., a temperature below that which could be obtained practically. The loss was minimised by bringing the water to the boil very slowly, and only admitting just sufficient steam to keep it at the boiling temperature. It was found that the metal cover to the cask retained a good proportion of the camphor, but it was not so pure as when condensed in a wooden box similar to that in use in China and Japan. The purest camphor was obtained when the distillate was made to pass through a long glass tube surrounded with a jacket of cold (running) water, the crystals being deposited when the temperature of the glass did not exceed 50 deg. C., or 122 deg. F.

In all the experiments the camphor had almost entirely distilled over during the first three hours, as several distillations conducted for twelve hours and longer resulted in no better yield, and the smell of the camphor under these circumstances was contaminated with that of decomposition products from the nitrogenous matter, etc., in the leaves and twigs. Three distillations could be made in the same apparatus during the day.

Sublimation experiments were also conducted, at varying temperatures and under different conditions, in order to try and obtain the translucent state common to commercial camphor. The most successful method was by mixing the crude camphor with slaked lime in the proper proportion of 40 to 1, and subjecting this in a closed vessel to a low heat for twelve hours, the heat being gradually increased up the sides of the



vessel in order to drive all the camphor into the upper portion. Copper vessels are the best for the purpose, as glass is liable to fracture from condensed moisture running down the heated sides.

Before sublimation can be effected it is essential that all the camphor oil should be expressed from the camphor. The camphor when first distilled appears to be practically free from oil, but after standing some days oil gradually separates and sinks to the bottom of the mass of crystals, and this appears to continue for months. Filtration with the aid of a vacuum effects a partial separation, but in practice on a large scale it would be best effected by means of a centrifugal machine similar to that employed for the separation of crystalline sugar from molasses.

#### OIL.

The oil obtained with the camphor from the leaves is of a clear yellow colour, having a specific gravity at 80 deg. F. of .9662. It contains a certain amount of camphor in solution, which can be separated to some extent by cooling to 10 deg. C. It would therefore be advisable to cool the mixture of camphor and oil, as much as possible, before submitting it to centrifugal expression.

#### YIELD AND PROSPECTS.

The *Circular* of the Royal Botanic Gardens, Ceylon, says that the yield varies a good deal, but that on the average about .75 to 1 per cent. of camphor may be expected from the young leaves and twigs, as well as a small quantity of camphor oil, which also has a market value. "Samples of camphor mixed with the oil were valued lately at Rs. 126 per cwt. If we assume that clippings will yield about 1 per cent. of camphor and oil worth Re. 1 per lb., we should be well within the mark. The cost of obtaining this should be about Rs. 53 per acre, made up as follows:—

|                                                   | Rs. | c. |
|---------------------------------------------------|-----|----|
| " Pruning 1,210 trees and carrying to factory ... | 37  | 0  |
| Distilling, fuel, packing, etc. ...               | 16  | 0  |
|                                                   | 53  | 0  |

"—*i.e.*, camphor can be put on the market as cheaply as tea per pound if the yield be at the rate of 177 lbs. per acre (cost of tea being estimated at 30 cents.) Now 177 lbs. will be yielded by 17,700 lbs. of clippings. In the case of bushes six feet apart this means 14½ lbs. per bush per annum, or about seven times the weight of flush obtained from a prosperous tea bush. On the other hand, the bushes are only half as many to the acre, and the plucking is much coarser, so that this estimate is not unreasonable, and the product is more valuable than tea. It seems not unreasonable to expect that where a bush, with 36 square feet of space to grow in, yields 12 to 15 lbs. of clippings a year, the cultivation will prove remunerative—not a bonanza, but yielding a fair profit. In Hakgala Gardens this yield is exceeded, so far as rough experiments show."

## **Manures on the Natal Market.**

### NOTES ON THE SEASON'S MANURES.

By ALEX. PARDY, F.C.S., etc., Analyst.

A REVIEW of the manures for sale in Natal during the latter part of the year 1907 will show that, as compared with last year's, there is no difference in the price of the nitrogenous manures, although the unit valuations show some variation on account of a slight increase in the percentage of nitrogen which has correspondingly modified the various unit values. Bulk for bulk the prices correspond. Phosphoric acid stands practically the same, while potash shows a tendency to cheapen on account of the importation of shipments of somewhat superior salts.

The following comparative list of the unit values for the last three years will show the resemblance between those of 1906 and 1907:—

|                                           | 1905. |    | 1906. |    | 1907. |    |
|-------------------------------------------|-------|----|-------|----|-------|----|
|                                           | s.    | d. | s.    | d. | s.    | d. |
| <i>Nitrogen:—</i>                         |       |    |       |    |       |    |
| In nitrates of soda and potash . . . . .  | 15    | 3  | 15    | 10 | 15    | 8  |
| In sulphate of ammonia . . . . .          | 14    | 6  | 15    | 6  | 15    | 9  |
| In blood manure . . . . .                 | —     |    | —     |    | 15    | 0  |
| In bone . . . . .                         | 11    | 6  | 11    | 6  | 12    | 0  |
| <i>Phosphoric Acid:—</i>                  |       |    |       |    |       |    |
| Water soluble . . . . .                   | 5     | 6  | 5     | 7  | 5     | 7  |
| Citrate soluble in slag . . . . .         | 4     | 3  | 5     | 0  | 5     | 0  |
| Citrate soluble in superphosphate . . . . | 4     | 1½ | 4     | 2  | 4     | 2  |
| Citrate soluble in bone . . . . .         | 3     | 8  | 4     | 2  | 4     | 2  |
| Citrate insoluble in slag . . . . .       | 3     | 0  | 3     | 9  | 3     | 6  |
| Citrate insoluble in other manures . .    | 2     | 9  | 2     | 9  | 2     | 9  |
| <i>Potash:—</i>                           |       |    |       |    |       |    |
| In sulphate of potash . . . . .           | 4     | 9  | 5     | 6  | 5     | 4½ |
| In muriate and kainit . . . . .           | 4     | 9  | 4     | 8  | 4     | 7  |

The only new feature of the market is a trial shipment of "nitrate" of lime (calcium cyanamide) in which nitrogen has, *pro tem.*, been given the same value as that in nitrate of soda. The efficiency of this manure as compared with that of other nitrogenous manures is still a matter of investigation. A large number of experiments have been carried out to ascertain its crop-raising value, with somewhat varied results: in some cases it has given results unit per unit of nitrogen equal to nitrate of soda, but it has been found necessary to take special regard to its time and mode of application, as, under certain circumstances, its action has been found

to be injurious. By adopting precautionary measures and adjusting its distribution, this disability can be so overcome that it will prove on specified soils an efficaceous and useful manure.

### UNIT VALUES.

The unit values of the various ingredients calculated on the ton f.o.r. Durban basis for 1907 have been apportioned as follows:—

#### NITROGEN.

|                                                       | s. | d. |
|-------------------------------------------------------|----|----|
| 1 per cent. in sodium and potassium nitrate . . . . . | 15 | 8  |
| 1 „ „ „ sulphate of ammonia . . . . .                 | 15 | 9  |
| 1 „ „ „ blood manure . . . . .                        | 15 | 0  |
| 1 „ „ „ bones . . . . .                               | 12 | 0  |

#### PHOSPHORIC ACID.

|                                                    |   |   |
|----------------------------------------------------|---|---|
| 1 per cent. water soluble . . . . .                | 5 | 7 |
| 1 „ „ citrate soluble in basic slag . . . . .      | 5 | 0 |
| 1 „ „ citrate soluble in superphosphate . . . . .  | 4 | 2 |
| 1 „ „ citrate soluble in bones . . . . .           | 4 | 2 |
| 1 „ „ citrate insoluble in basic slag . . . . .    | 3 | 6 |
| 1 „ „ citrate insoluble in other manures . . . . . | 2 | 9 |

#### POTASH.

|                                                         |   |    |
|---------------------------------------------------------|---|----|
| 1 per cent. in sulphate and nitrate of potash . . . . . | 5 | 4½ |
| 1 „ „ „ muriate . . . . .                               | 4 | 7  |

To the above values the railage should be added to those manures which are purchased beyond Durban; and in the case of complete, or mixed, manures a sum of, say, 10s. or 15s. per ton should be added to cover the cost of mixing, handling and rebagging.

To arrive at the commercial value of manure it is necessary only to multiply the percentage of the various ingredients by its proper unit value, when the product resulting will represent its money value per 2,000 lbs.

As the ingredients in manures are not always expressed by merchants in the terms in which the accompanying list has been drawn up, the following table may be helpful in converting others into the terms therein used.

*To convert—*

Sulphate of Ammonia into Nitrogen, multiply by  $\frac{7}{33}$  or 0.2121.

Ammonia into Nitrogen, multiply by  $\frac{14}{17}$  or 0.8235.

Phosphate, Phosphate of Lime, Tricalcium or Bone Phosphate into Nitrogen, multiply by  $\frac{142}{310}$  or 0.4580.

Sulphate of Potash into Potash, multiply by  $\frac{47}{87}$  or 0.5402.



## ***The Place of Legumes in our Agricultural System.***

By E. R. SAWER, Director Experiment Stations.

---

It is frequently asserted that good grass-hay and an ample supply of water will keep cattle of every type in good condition throughout the winter. From the rancher's standpoint this may be true, but sooner or later recognition must be given to the value of "finishing" cattle for the butcher—the function of graziers in other countries. The dairy farmer, again, finds that the milk flow bears a definite relationship to the character and composition of the food supplied to his cows. Good grass-hay, though possibly capable of maintaining healthy growth in young stock, fails to furnish in the desired proportion the constituents required for the production of prime beef in the former case, and a constant flow of rich milk in the latter. The addition of concentrated food in the shape of cereal grains has been the method most commonly employed for supplementing this deficiency, but of recent years the discovery has been made that these flesh and milk-forming materials can be largely and more economically supplied in the shape of leguminous crops, cured as hay or silage, among which lucerne, or alfalfa, stands pre-eminent. An early knowledge of this fact has enabled firms dealing in artificial cattle foods, to amass huge sums by substituting for cereal grains more cheaply prepared and equally valuable substances, into the manufacture of which legumes, and particularly their seeds, have largely entered.

The inherent value of the legume to the stock-feeder lies in the relatively large proportion of nitrogenous or proteid matter contained in the tissues of these plants, and particularly in their seeds. This proteid matter is alone available for the formation of flesh, and the building up of nerve and frame tissues. The fats, sugars and starches comprising the remaining nutritive elements of the food merely furnish heat or energy to the animal economy. It thus becomes apparent that lucerne hay, with 16 per cent. of proteid matter, is, as a flesh and frame-former, very much more valuable than the best grass-hay with perhaps, at most, 9 per cent. of protein. The grain of maize again with a maximum proteid content of 10 per cent. has a lower actual feeding value than an equal weight of soy bean with 35 per cent. of proteid substance. To get the best results from live stock—results which will be obtained with the greatest economy to the farmer and the best advantage to the animal—it is first necessary to determine the required proportion between flesh-forming and heat or energy-producing substances for specific purposes.



TANGIER PEA (SPANISH LENTIL): *LATHYRUS SATIVUS*.  
Central Experiment Farm, Cedara.





and, secondly, to ascertain in what shape the former can be most cheaply supplied in palatable form. In other words, a cheap and well-balanced ration is the foundation of any successful system of feeding, and in the provision of such a ration the modern finding is that the legume, in one shape or another, must play an important part.

Apart, however, from the importance of these crops, from the standpoint of the stock-feeder, the agriculturist finds that no farming system can indefinitely ignore the advantages accruing to their cultivation. As a restorative crop to replace profitless bare fallows and maintain, if not increase, the natural fertility of the soil, legumes have an established place in every recognised rotation: their capacity for fixing atmospheric nitrogen and general habits of growth result in their universal employment as green manures in substitution for nitrogenous fertilisers; and the growth of many varieties renders them suitable for growth as a cleaning crop in dirty lands.

Leguminous crops are of importance everywhere, but in Natal, and in other countries circumstanced like Natal, where maize, with its low proteid content, is the staple crop, heavily preponderating over all others, the growth of legumes to be used in conjunction with maize is of importance second to none in the whole region of agriculture. The maize crop, in whatever form it be used, is deficient in flesh and bone-formers, but rich in heat and energy producers; the legumes are rich in flesh and bone-formers, but generally deficient in heat and energy producers; they are complementary to the maize crop, and if used in conjunction with it, correct its defects. Only by means of the assistance of these or of similar fodders, can the maize crop be used to the best economic advantage. The discovery of some leguminous crop, which could be grown with ease and profit in the different agricultural areas of Natal has therefore been regarded as one of the most important tasks to be undertaken by the experimenter, and a very large number of varieties have been tried. A survey of the results shows that the cultivation of leguminous plants generally in the conditions of soil and climate prevailing at Cedara is difficult, and that only a limited number can be relied upon for uniformly satisfactory returns; while, on the other hand, a more extensive selection can be recommended for attention on the coast belt and for winter growth under irrigation in the relatively mild climate of Weenen and similarly sheltered areas.

*Lucerne (Medicago sativa).*

A plant which has revolutionised the stock-raising industries of four Continents and become the mainstay of agriculture in many countries, necessarily demands premier consideration. Large sections of what was formerly desert, have, by its agency and irrigation, become centres from which are annually shipped millions of cattle, sheep and swine, as well as vast quantities of hay. In South Africa it has already

become the chief forage plant in the districts engaged in ostrich farming, and the presence of a stand of well-established lucerne has often been sufficient to raise the value of the ground upon which it is growing from £1 to £50 per acre. The crop, however, is not an easy one to establish, is somewhat exacting in the conditions of soil and climate required, and calls for careful cultivation if the best results are to be secured. Failure to fully appreciate these conditions has locally led to many disappointments, and the area available in Natal for successful culture is undeniably a limited one, corresponding largely with the distribution of deep alluvial, sandy loams containing re-deposited lime. That the crop can be grown with a measure of success on other formations is not denied, but our immediate object is rather to draw attention to allied crops of annual or bi-annual growth, capable of filling the place of lucerne in positions unsuitable for the latter, and as elements in an ordinary short rotation. Lucerne, as a crop standing apart, of a permanent character and occupying the ground for a number of years, has in the past received in the pages of this *Journal* detailed attention, and immediate publication will in the future be given to additional information deduced from exhaustive current experiments.

*A. Leguminous Crops Suitable for Light Soils Lacking in Fertility.*

*Tares* or *Vetches* have been found to be amongst the most easily grown crops tried at Cedara, ranking in this respect with lupines and soy beans. The hay is richer even than that of lucerne in point of proteid content, and there can be no hesitation in recommending them as a standard crop to be included in any system of agriculture finally adopted. The vetches are closely related to the true Lentils (*Ervum*) and to the Spanish Lentil (*Lathyrus*). A number of varieties are under cultivation, all of which merit trial in the search for leguminous plants suitable for general adoption in Natal. Those hitherto tried at Cedara have been the Common Tare (*Vicia sativa*) of both winter and spring types, the White Vetch (*V. alba*), the Upright or Shining Tare (*V. fulgens*), the Narbonne Vetch (*V. Narbonensis*) and the Hairy Vetch (*V. villosa*). Of all these the Hairy Vetch has been the most successful, the accompanying photograph showing the results of 3½ months' growth in the variety plot, the crop having been sown on 6th February, and the picture taken on 26th May. An earlier cutting from the stand yielded in March at the rate of 1,563 lb. of fodder per acre, and the final cutting at approximately 12,000 lb. The habit and growth of the tare will be clearly seen from the photograph, though for this purpose the crop had to be lifted from the ground and supported on stakes. It formed a thick tangled mass of creeping stems covered with dark green feathery leaves, and covered with bright, showy, purple flowers, to which the bees were constantly attracted. The plants had already shed numerous seeds, and regrowth was taking place even at the time of the photograph.



BLUE MELILOT (*MELILOTUS COERULEA*).  
Central Experiment Farm, Cedara.





Although the crop is only a biennial, by self-seeding it may become practically a perennial. As to its feeding value, Tracy reports that in the United States, the vines may reach a length of 12 feet, forming a dense mass of forage 2 feet in depth. Stock of all kinds eat this plant greedily, both as pasture and hay. Mr. Ferguson, of Umtwalumi, who has grown the crop from seed supplied by the Department, reports that his calves are very fond of it. One great advantage is that it is disliked by locusts, probably on account of the hairs. Mr. Galbraith, Government Agronomist in the Orange River Colony, reports that while the locusts ate down all other forage plants, especially the lucerne, standing on their heads to eat it right into the ground, they did not touch the Hairy Vetch.

The objection to most tares is that owing to their weak stems upright growth cannot be obtained without support. For pasture, this is a matter of small importance, but if grown for forage or hay, this should be sown with some supporting crop, such as oats or rye. An exception is found in the Upright or Shining Vetch, which has a stem strong enough to support the weight of the crop in an upright position. At the Winkel Spruit Experiment Farm this type produced during the winter a dense crop two feet in height within ten weeks of sowing.

The relative yields of different varieties, all of which were grown on poor ironstone gravel at Cedara, is seen from the following table, which represents pounds of fodder harvested per acre:—

|                                                          | lbs.                  |
|----------------------------------------------------------|-----------------------|
| <i>Vicia sativa</i> (Spring Vetch) . . . . .             | 9,375                 |
| <i>Vicia sativa</i> (Winter Vetch) . . . . .             | 1,875                 |
| <i>Vicia sativa</i> (Winter Vetch, True Hardy) . . . . . | 1,250                 |
| <i>Vicia alba</i> (White Vetch) . . . . .                | 1,875                 |
| <i>Vicia villosa</i> (Hairy Vetch) . . . . .             | 13,563 (two cuttings) |
| <i>Vicia ervilia</i> (Black Bitter Vetch) . . . . .      | 8,750                 |
| <i>Vicia</i> ? (Golden Tares) . . . . .                  | 3,750                 |

*Lentils* may be divided into two closely allied groups, the true Lentils (*Ervum lens*) and the Spanish Lentils or Tangier Peas (*Lathyrus sativus*), both of which, and particularly the latter, are very worthy of consideration. According to the New Mexico Experiment Station, "the fodder or hay made from the vines of the former, when cut in their early growth, is highly relished by stock, and for milch cows is one of the best." At Cedara on the poorest of soil they have grown readily and reliably, and have withstood frost and a considerable amount of drought. The yield of hay has certainly not been high, and the plants have proved unfitted for the production of grain, owing to the shedding of early ripened foods, but as a reliable winter forage crop to be grown under irrigation, it might certainly find a place.

Of *Lathyrus* there are several species under cultivation, most of which have been recognised as forage plants. Von Muller names *Lathyrus*

cicera (*Jarosse*), *L. pratensis* (*Meadow Pea*), *L. tuberosus*, which forms small tubers and is practically perennial, *L. sativas* (*Spanish Lentil or Flat Pea*), and *L. sylvestris* (*Wood Pea*), which is habitually perennial. Of the *Jarosse*, he states that it furnishes a tender, palatable fodder on light, sandy soils, and of the *Spanish Lentil*, that it is superior to vetches in quality of fodder and seed. In India it is grown as a cold weather crop, often on very heavy clay soils, which will raise no other kind of pulse. The seeds, however, can only be used with caution and well boiled, as their frequent employment otherwise induces paralysis in stock and the human subject. The same objection, by the bye, holds good to the constant use of the common horse-bean. The plant should therefore be only used for its herbage. Of the *Wood Pea*, Wilson and Smith say, "when it succeeds it forms a rank tangled mass of vines three to four feet high, and yields heavy crops. In favourable localities several cuttings are obtained each season, and a field once established will endure for years. It is very rich in protein, the air-dried hay analysing about 27 per cent. The crop appears to be an excellent soil-renovator."

Sown in January at Cedara, the *Tangier Pea*, or *Spanish Lentil*, produced in May a hay crop at the rate of 7,500 lb. per acre, and remained green well into the winter. The accompanying photograph represents the appearance of the crop four months after sowing.

*Melilotus*.—The group of plants included in this genus has received attention in the pages of the *Journal*, but forms so important an element in the present selection of fodder plants and soil-renovators, as to merit a repetition of its advantages.

There are several species of melilot in cultivation, all of which contain *cumarin*, which gives them the pleasant odour of new mown meadow hay. When mixed with grass hay they increase its fragrance. *Melilotus alba* and *leucantha* both bear the name of *Bokhara clover*; the former is called sweet clover in the United States. *M. altissima* is known as *Hungarian melilot*. *M. coerulea*, the blue or sweet melilot, according to Muller, "forms an ingredient of the green Swiss cheese, which owes its flavour and colour chiefly to this plant."

Both the *Blue Melilot* and *Bokhara Clover* have been successfully cultivated at Cedara, and a considerable acreage of the latter is being grown during the present season both as a seed crop and for green manure. The *Blue Melilot* made very fine growth in 1904-5, and remained green far into the winter. It produced seed at the rate of 238 lb. per acre and more than three tons of hay. The growth was rapid, the plants were succulent, and the stems remained tender up to the latest stages. It seemed to be one of the most promising of the legumes for our soil and climate, but in 1905-6 grew very poorly and was very disappointing.

The accompanying photograph represents the growth made during five months by a crop of *Blue Melilot* sown on 30th December, with a





HAIRY VETCH (*VICIA VILLOSA*).  
Central Experiment Farm, Cedarä.



small plot of Bokhara Clover on the right. The latter has done very well for two years in succession, growing more slowly than the Blue Melilot, but eventually reaching a height of 4 feet to 4½ feet. It has, however, to be cut for hay or forage before attaining that height, as the stems become woody. The plants remained green quite late into the winter and seemed but little affected by frost and drought. In America, Wilson and Smith say: "If sown in spring a crop may be cut in fall and two or three crops the following season. For hay it should be cut when about 18 inches to 20 inches high. If the same land is to be kept in sweet clover for more than two years, only two crops should be cut for hay each season and the third allowed to form seed." Stock do not like it at first, but eat it greedily when they have acquired the taste. Bokhara Clover is regarded in America and elsewhere as one of the best green manures.

The variety *M. dentatus* has not hitherto been tried at Cedara, but is being investigated during the present season. When forwarding a packet of seed of this species, Mr. B. Hanson, of Tweed River, New South Wales, writes:—

"This is one of the best fodder plants in Australia, which as yet is but little known. It is stated that it grows profusely, and yields an abundant supply of the most palatable fodder on an island off the coast of Tasmania. It attains a height of 5 and 6 feet, has a shamrock or clover-shaped leaf and small yellow flowers. It has a strong coumarin flavour like newly mown hay, especially when seeding, and it is eaten greedily by horses, cattle, sheep, and pigs; and bees are very fond of it as it is very rich in honey. This plant is very rich in nitrogen and quickly enriches land on which it is grown. It grows well in the poorest soil, is triennial, and maintains itself easily when established, and it has proved a wonderful fodder plant. A farmer in Victoria has tried it with great success on his horses, and another, who has 100 acres of it, says he finds he can keep more stock on it than on a similar area of ordinary lucerne—*Medicago sativa*—and it also makes first-class ensilage.

"A few years ago this island was a desolate place occupied by a few fishermen and woodcutters, etc. A syndicate leased it for cattle raising, and in consequence of a poisonous plant growing there among the grasses the cattle died off, and it was abandoned. Later on a vessel was wrecked on the coast, and among the wreckage washed ashore were some mattresses filled with fibre containing seed. As this decayed the said plant grew and overspread the island. Now the island has a population of 600 souls, and exports weekly 50 head of fat cattle. It is said that melilot has in the course of a few years changed poor sand dunes into dark, almost black, loam. Through its adaptability to grow and yield heavily on poor soil, this plant should prove a great boon to stock-breeders, and within a few years should become world-renowned."

*Lupines.*—Had the lupine an unblemished reputation as a fodder



crop, the difficulty of working out a profitable system for such farm as Cedara would be at an end, for this legume grows freely and luxuriantly on all classes of soil represented at this centre, and even better through the dry than in the wet season.

In the form of green forage, hay or grain, the lupine is used in Europe as feed for sheep, though they show little partiality for it in Natal. On account of its bitter taste it is not palatable to horses and cattle, but may be mixed in small proportion with others. Stephens, in his Book of the Farm, says: "The stems make excellent hay, and the seeds are found to be very superior as food for sheep, lambs and fattening wethers. They are also given to horses and cattle, mixed with oats or beans; and lupine meal is given with milk to calves." McConnell says: "Lupine-seed meal is a desirable ingredient of all milk substitutes for calves." Armsby, in his Manual for Cattle Feeding, says: "The Yellow Lupine yields, when cut just at the end of flowering, the most highly nitrogenous of all coarse fodders. Experiments by Heidepreim on lupine hay cut just as the pods were beginning to form, showed that it contained the enormous quantity of 27.8 per cent. of protein in the dry matter. The digestibility of the protein by sheep was found to be 74, that is, almost the same as in vetches and lucerne."

The lupine thrives on a light, sandy and dry soil, giving at Cedara a better return when grown during the winter without irrigation, than as a summer rain-crop. It is undoubtedly a splendid renovator of poor or exhausted lands, but must be fed even to sheep with caution, and only in combination with other feeding-stuffs less rich in protein. At various times poisonous effects have been observed to result from the feeding of lupine hay to sheep. These have been frequently ascribed to the alkaloids it contains. More recent investigations indicate that the amount of alkaloids present in the hay is too small to produce evil results, and that the cause is to be sought in a fungus which attacks the crop under certain, as yet unknown, conditions. Von Muller says: "The lentil-like seeds are very fattening when used as an addition to ordinary fodder, and are in this respect quite equal to oil-cake." The bitter principle (*lupinin*) may be removed by boiling or soaking in salt water.

Lupines have been largely used in Europe for the improvement of poor, sandy soils. They are ploughed in at the blossoming stage as green manure. In similar fashion large areas of poor land in Canada have been brought into good heart by ploughing in successive crops of red-clover, for which the lupine would be a preferable substitute in Natal. Two or even three crops could be grown in most situations and turned under during the year. The dissemination of cut-worm and weed-seeds by means of kraal manure is a serious offset to the value of this form, and even failing such disadvantage, the supply is quite inadequate to the large areas which call for some coarse organic manure. It is

believed therefore that the lupine is destined to play an important part in the maintenance of the fertility of Natal soils.

In the Cedara experiments the Blue Lupine showed itself less adapted for late sowing than either the Yellow or the White, both of which make more speedy development. As a grain-producer the White was considerably the best of the three; while for green manuring the Yellow, when early sown, and the White when late sown, would have proved preferable. Grain has been produced in mid-winter, and sowings can really be made at any time of the year.

The following table represents the relative yields of grain and dry fodder secured from the different varieties on light, sandy soil without manure, planted on the 9th December:—

|                   |     | Source.       | Grain.      | Dry Fodder. |
|-------------------|-----|---------------|-------------|-------------|
| Blue Lupine ...   | ... | Vilmorin ...  | 312 lb. ... | 6,000 lb.   |
| do. ...           | ... | Sutton ...    | Sample ...  | 18,000 lb.  |
| White Lupine ...  | ... | Vilmorin ...  | 500 lb. ... | 3,500 lb.   |
| do. ...           | ... | Sutton ...    | 500 lb. ... | 1,500 lb.   |
| do. ...           | ... | Wilkinson ... | 167 lb. ... | 3,167 lb.   |
| Yellow Lupine ... | ... | Vilmorin ...  | 187 lb. ... | 2,250 lb.   |

A statement is further appended of relative results due to differences in the times of planting:—

YIELDS, IN LBS. PER ACRE, OF LUPINES SOWN AT DIFFERENT TIMES.

FIRST TEST.

| Date of Sowing. | White. |             | Yellow. |            |
|-----------------|--------|-------------|---------|------------|
|                 | Grain. | Dry Fodder. | Grain.  | Dry Fodder |
| 15—9—04 ...     | 80     | 213         | 27      | 80         |
| 29—9—04 ...     | 470    | 240         | 213     | 220        |
| 13—10—04 ...    | 170    | 160         | 87      | 200        |
| 27—10—04 ...    | 90     | 280         | 187     | 447        |
| 10—11—04 ...    | 60     | 720         | 127     | 443        |
| 24—11—04 ...    | 20     | 800         | 73      | 380        |
| 8—12—04 ...     | Nil    | 330         | 40      | 193        |
| 22—12—04 ...    | Nil    | 200         | Nil     | 103        |
| 5—1—05 ...      | Nil    | 220         | Nil     | 127        |

## SECOND TEST.

| Date of Sowing. | Blue.       | Yellow. |       | White. |             |
|-----------------|-------------|---------|-------|--------|-------------|
|                 | Dry Fodder. | Grain.  |       | Grain. | Dry Fodder. |
| 7—12—05 ...     | 5,340       | 540     | 4,500 | 1,260  | 3,000       |
| 21—12—05 ...    | 7,080       | 660     | 6,102 | 1,320  | 3,120       |
| 4— 1—06 ...     | 2,100       | 135     | 5,640 | 1,260  | 2 880       |
| 16— 1—06 ...    | 4,800       | 180     | 5,220 | 1,560  | 3,480       |
| 29— 1—06 ...    | 2,400       | 71      | 4,320 | 210    | 3,300       |
| 10— 2—06 ...    | 3,180       | 12      | 6,540 | 210    | 3,960       |
| 22— 2—06 ...    | 1,980       | 9       | 6,060 | 97     | 5,760       |
| 1— 3—06 ...     | 1,500       | 2       | 6,780 | 17     | 7,200       |
| 13— 3—06 ...    | 3,720       | Nil     | 6,540 | 21     | 6,960       |
| 26— 3—06 ...    | 960         | Nil     | 6,840 | Nil    | 6,540       |
| 9— 4—06 ...     | 480         | Nil     | 6,540 | Nil    | 7,260       |

(To be continued.)

A *Reuter* cable, dated 21st November, to the daily press, stated: "Natal mealies were to-day placed on the official list. There were many inquiries throughout the United Kingdom for them. The price is 26s. 6d., and for Cape oats 17s. 4d. The former run 400 lbs. per quarter, and the latter 304 lbs."

In a report on a demonstration by the inventor of a new process of degumming ramie fibre, the *Shanghai Mercury* says: "The process lasts but ten minutes, and is most simple. The ramie is first placed in a vessel containing boiling water, to which is added some secret composition, and after boiling four and one-half minutes it is washed, bleached, and thoroughly degummed. The fibre comes out almost snow-white and is very much like silk. The fibre is not in the least injured by the process, but rather strengthened."



## **Denatured Alcohol.**

WITH reference to our article on the distillation of alcohol, in the last issue of the *Journal*, we have received the following letter from Mr. Walter H. Pay, F.C.S.:—

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

Dear Sir,—I have read with much interest the very able article appearing in your December issue on "The Distillation of Alcohol," and I enclose a cutting sent to me by Mr. Head, District Engineer, P.W.D., which perhaps you may think worth reprinting.

It should be distinctly borne in mind, however, that the remarks both in your article and in the cutting enclosed on the fuel economy of gasoline *versus* alcohol do not apply to South Africa in such a marked degree, because America is really the heart of the gasoline or petrol industry, but in South Africa, where various factors inimical to gasoline are encountered, I do not think alcohol need be dismayed by what is more or less a bogey.

The whole question is one of vital importance to this country, and I trust that the matter will not be allowed to drop into oblivion. So far, my investigations have been merely superficial, but I commend the matter to the various automobile societies of South Africa, and to the Natal Motor Boat Association, and perhaps a few of the more enthusiastic members of these may be prevailed upon to take the matter up.—Yours, etc.,

WALTER H. PAY.

The cutting referred to by Mr. Pay is an extract from an article on "The Problems of Industrial Alcohol," which forms one of a series on the "Chemistry of Commerce" in *Harper's Monthly Magazine* for August, 1907. The author, Robert Kennedy Duncan, Professor of Industrial Chemistry at the University of Kansas, after discussing a number of purposes to which alcohol is applied in the industrial arts, passes on to the internal combustion engine.

"The question of profitably substituting in these engines alcohol for petrol," he states, "is one enormously controversial, but out of the warring testimony there appear certain facts that seem unquestionable.

"Alcohol," he continues, "is reproduced in the cycle of the seasons; it is absolutely inexhaustible; it is made out of sunshine and air, and its composition does not lessen the value of the soil or the energy of the earth. Petrol, on the contrary, represents a part of the stored energy of the earth; it exists only to the extent of about two per cent. in petroleum, and its supply will in the future inevitably fail. To-day the supply of gasoline is so much less than the demand that it practically cannot be

obtained by many who would use it. If all the petrol engines in America worked continuously for a day of ten hours they would consume some 4,000,000 gallons of gasoline! Then, industrial alcohol is practically constant in composition; gasoline, on the contrary, is a mixture and is generally badly adulterated. Again, alcohol is beyond all question safer and more cleanly to use. Its safety lies in the fact that it is not so readily inflammable, and that it dissolves in water: in the event of fire its dilution in water, even to its percentage in whisky, will at once extinguish it. Gasoline, on the other hand, is extraordinarily inflammable, and what is much worse, it floats on water; in a gasoline fire the more the water is used the more the fire spreads. This fact for alcohol is of extreme importance in the question of insurance and in its use for motor boats. Still, again, with alcohol the smell of the exhaust is almost imperceptible: at any rate, gasoline, in this respect, could not endure comparison. Another advantage for alcohol lies in the fact that cylinders and valves do not become plugged with residual products as with gasoline, and its composition is cleaner and its ignition more perfect. Perhaps the greatest advantage possessed by alcohol in a struggle with gasoline rests in the higher compressibility of its vapour: the compression of alcohol vapour may safely be carried to 200 lb. per square inch, while that of gasoline cannot endure more than 80 lb. without the danger of premature explosion. Next, it requires no more skill to operate an alcohol engine than a gasoline engine. Finally, it may be expected that alcohol can always be made in the locality of the demand; it will not require, like gasoline, transportation through extensive distances.

"But there are disadvantages also unquestionable. The great positive disadvantage is the disparity in the heating value: for, weight for weight, the heating value of alcohol is only 0.6 that of gasoline; this means, in accordance with practical experimentation recently carried out by Professor Lucke, of Columbia, that other things being equal, a small engine requires 1.8 times as much alcohol as gasoline per horse-power hour. A second disadvantage inheres in its higher vaporising point, for this necessitates a special modification in the engine in order to secure the complete vaporisation of the alcohol and its very best consequent working. The third disadvantage refers to what seems to be a fact, that it is singularly easy to burn an excess of alcohol fuel without detecting it, much more so than with petrol.

"As a result of these warring factors, and so far only as to-day is concerned, it seems established that:

"(1) With proper manipulation, any engine working with gasoline or kerosene can operate, unaltered, with alcohol.

"(2) It can be operated with alcohol only at about twice the cost of gasoline. This is shown in a recent test of fuel economy, in which three automobiles, running on alcohol, a mixture of kerosene and gasoline, and

gasoline respectively, travelled from Trenton, New Jersey, to Atlantic City, 106.8 miles. While the alcohol engine ran perfectly at a rate of thirty-five miles an hour, it consumed  $14\frac{1}{2}$  gallons of alcohol, at 37 cents a gallon, constituting a total cost of \$5.36 $\frac{1}{2}$ , as against the performance of its rival, which consumed  $7\frac{1}{2}$  gallons of gasoline, at 22 cents, with a total cost of \$1.65. The relation of the two is best shown as the cost per ton per mile, which for alcohol works out to \$0.0392, and for gasoline \$0.01354—about half as much.

#### SOME ADVANTAGES OF ALCOHOL.

“But there are certain factors, three of them, which, taken together, may, and probably will, before long, throw the advantage to the side of alcohol. It should be remembered that with equal cost of running the advantages of alcohol are unquestionable.

“First, the supply of gasoline is rapidly diminishing, while, as we have shown, the demands on it are increasing, and it is easy to see, and reasonable to predict, that its price will continually rise; this despite the fact that the producers of gasoline *could* sell it at a far lower price.

“Second, the disadvantage that alcohol has hardly more than half the heating value of gasoline may be compensated by the advantage that its vapour will endure a vastly greater compression, and will thus yield a corresponding increase in power. The development of engines in which full advantage is taken of this and other coincident facts will doubtless materially alter the ratio in the relative economy; and this development the American inventor, now that he has the alcohol to work with, may certainly be trusted to promote. Even now the development has started through a proposal to use, mixed with the alcohol vapour, acetylene from the action of watered alcohol upon carbide.

“The third factor, however, working with the other two, is the one which ultimately may be expected to make of alcohol a universal source of power. This third factor is the cheapening of the production of alcohol.

“Alcohol may be produced from any substance containing starch or sugar. Consequently the raw materials of its manufacture lie everywhere, and long-distance carriage is eliminated. Whether it is most profitably produced from sugar cane, beets, fruits, potatoes, rice, wheat, rye, or Indian corn, depends simply on locality.”

We have also received from Col. Leuchars the *Journal of the Society of Chemical Industry* containing the paper on The Wood Distillation Industry, by Max Muspratt, to which reference was made in the Colonel's article last month.

The author points out that the two conditions of success as far as situation is concerned, which must be borne in mind, are (1) cheap wood, and (2) good outlet for charcoal; and he proceeds to review the principal



countries where wood is distilled with recovery of all the principal products.

"In Great Britain," he says, "wood distillation is at present practically confined to waste wood, especially in conjunction with bobbin works, but the great disadvantage is that the quantity of waste wood available is barely sufficient to keep a thoroughly equipped plant in full work, the quantities of wood spirit are not considered worth recovering, and the brown acetate of lime produced is becoming more and more difficult to market. In Scotland one, perhaps two, works are well equipped and produce grey acetate of lime of good quality, but very limited quantity. The charcoal is readily marketed.

"In Germany the regulation of forestry by the State and the insistence on replanting cleared areas has done much to keep the wood distillation industry in a wholesome condition; in addition, practically all the improvements in process have been carried out in that country, but the demand for the products is so great that at least half the total consumption of acetate and wood spirit has to be met by importation.

"Austro-Hungary, Russia, Bosnia, Norway and Sweden, owing to their wealth in forests, have all for many years been looked upon as most promising fields for this industry; they were all exploited more or less by the ill-fated Trebertrocknungsgesellschaft of Cassel, and though individually works have survived the gigantic failure of that firm, the fundamental weakness, namely, the difficulty in marketing the charcoal in those countries, is likely to be a serious handicap until greater all-round industrial development brings larger demand for charcoal.

"It is across the Atlantic we must look for the best industrial development of wood distillation. In the United States vast tracts of virgin forest have been felled for this industry, but, unfortunately, replanting has not taken place, as the forest wealth seemed inexhaustible; now it is being gradually realised that the most accessible of the suitable timber has been used up, and every few years the works have to be moved further and further from the centres of consumption. The situation is not yet acute from this point of view (though temporarily it is very acute from another cause), but it is already giving cause for anxiety, and the world is watching keenly for some signs that the wood-distillers are looking ahead and taking steps to deal with the problem. Actual information as to the technical side is not easy to obtain, but it is doubtful if the industry is so well developed as in Germany, and it is to be hoped that, both for the consumers' and the producers' sake, no effort will be spared to obtain the maximum output of products for the minimum consumption of timber: while the question of replanting felled areas is one of national and even international importance.

"The position in Canada is much more healthy; there virgin forests still stand in accessible localities, and the industry is in capable hands.

while the outlet for the charcoal has been greatly facilitated by an unprecedented development of domestic consumption, which the United States might with advantage copy. Replanting is also a condition insisted upon when the forests are systematically felled, and the outlook for this industry is in Canada free from anxiety, especially if, as is probable, the methods are brought up to date, which at present they are far from being.

“But

#### NEW SOURCES OF SUPPLY

must be looked for, and the possibility of the founding of a home industry deserves very serious attention. Schemes of afforestation are being freely discussed from the point of view of national amenities, and as relief works in times of depression in the labour markets. Little has, however, been said of the industrial side, and as to wood distillation nothing. On the forestry side, the industrial chemist cannot speak with authority, but on the industrial side a *prima facie* case can be made out which deserves the very earnest attention of experts and public authorities who own large tracts of land, such as water-sheds. One of the great deterrents to forestry in this country has been the length of time the planter has to wait for a return on his capital, and the fundamental advantage of wood distillation is that the cycle is only about 30 years, which is very much shorter than is required for any other industrial application of timber. The woods which are the best for wood distillation are birch and beech, but coniferous woods and oak with recovery of turpentine and tannin respectively are also good, while all hard woods are more or less suitable.”

He then proceeds to give balance-sheets showing expenditure and receipts in respect of works in Germany—to which Colonel Leuchars has already made reference—and proceeds to construct a balance-sheet for hypothetical works in England in order to show that it would pay to plant waste lands and use the timber thereof for wood distillation purposes, pointing out that if the uncultivated lands of Great Britain can be divided up into afforestation areas of from 4,000 to 6,000 acres, so as to give by distillation employment to the extent of over £2,000 and revenue of from 20s. to 25s. per acre per annum, a very great new source of national wealth will be tapped. With our extensive and gradually increasing areas of land under wattles, the benefits we might reap by the utilisation of our waste wood must be obvious.

To accentuate the importance of the industry, the progressive output of the United States in the two principal products, apart from charcoal, is here given:—

|                | Wood Alcohol.<br>Gallons. | Acetate of Lime.<br>Tons. |
|----------------|---------------------------|---------------------------|
| 1880 . . . . . | —                         | 2,943                     |
| 1890 . . . . . | 1,000,000                 | 11,900                    |
| 1900 . . . . . | 5,000,000                 | 38,400                    |





It will be seen that while Germany continues to lead in the use of commercial alcohol, the greatest proportionate gain has been on the part of France, where the use of alcohol for illuminating purposes is constantly increasing. In Germany the industrial cartel or agreement, under which denatured alcohol has been manufactured since 1899, has just been extended until 1918.

Experiments have lately been made at Berlin to determine the inflammability of alcohol, both as a liquid and as a gas. The liquid burns readily in contact with a flame or an electric spark; but its inflammability depends upon the degree of purity of the alcohol, the limit being 42 degrees. Below this degree alcohol does not burn. The immersion of a live coal in alcohol will not ignite it even if the liquid shows 90 degrees alcohol. The gas of alcohol forms an explosive mixture with air, provided the gas mixture contains at least 100 grains of pure alcohol per cubic foot, which would be 5.2 per cent. of alcohol gas. The minimum temperature necessary to provoke an explosion is 18 degrees Cent., but this minimum temperature increases with the diminution of the alcoholic purity of the liquid under evaporation.

Alcohol under evaporation produces a gas mixture that explodes as follows:—

|                                     |                     |
|-------------------------------------|---------------------|
| 96.0 per cent. alcohol at . . . . . | 18 deg. centigrade. |
| 85.5 per cent. alcohol at . . . . . | 20 deg. centigrade. |
| 76.9 per cent. alcohol at . . . . . | 22 deg. centigrade. |
| 67.7 per cent. alcohol at . . . . . | 24 deg. centigrade. |
| 57.8 per cent. alcohol at . . . . . | 26 deg. centigrade. |

A series of experiments has also been conducted at Berlin to determine the relative economy of lighting with alcohol and with incandescent lights fed by petroleum, and from these experiments it was concluded that alcohol has nothing to fear for the present from the competition of petroleum.

The use of

#### ALCOHOL AS A FUEL FOR AUTOMOBILES

was also discussed at the Convention. Without a change of motors it is possible, it is stated, to use an equal mixture of alcohol and of benzole that produces greater power than that of gasoline alone. This mixture has been used on the auto buses of Paris and has given excellent results. By improving the denaturing of alcohol the mixture can be made as serviceable as gasoline.

Experiments made by the Automobile Club of France have shown that with some modification of motors it is possible to use pure alcohol with equal success. The objection has been made that alcohol contains but half as much caloric power as gasoline, and that it will be necessary to use twice as much to accomplish the same end. But is this exact? It seems

to have been forgotten, the *Beet Sugar Gazette* comments, that alcohol contains a considerable quantity of water which at the moment of explosion is converted into steam and aids the motor by its expansion.

The general opinion of the Convention was very hopeful of the rapidly increasing use of alcohol in France for automobiles as well as for heating and lighting, and since in France alcohol is distilled from the products of the sugar beet, this is a matter of great interest to the beet growers of that country.

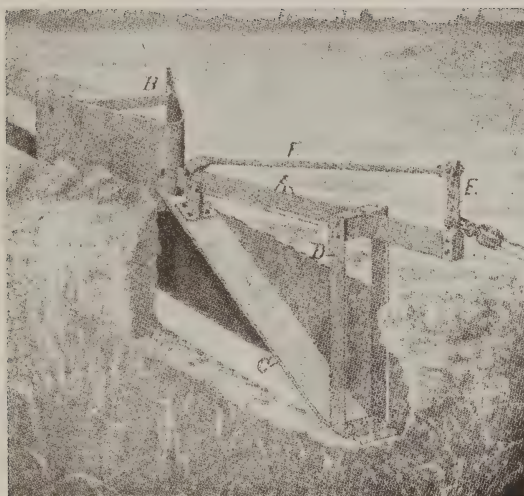
---

### ***Improved Ditching Plough.***

---

WE learn from the *Scientific American* that a patent has been secured by Mr. Charles T. Howell, of Glen Flora, Wis., U.S.A., on a recently invented improved ditching plough, which is especially adapted for digging tiling sewer ditches or draining ditches. The device is of very simple construction, and capable of effective service in any character of soil. It is especially adapted to be drawn by a traction engine or capstan.

As shown in the illustration facing this page, the implement comprises a beam *A*, which extends forward and with an upward inclination from the cleaner *B*. The latter is triangular in shape, being provided with two diverging wings. The purpose of the cleaner is to travel over the surface of the ground and remove the excavated material from the edges of the ditch. The beam *A* is hinged to the cleaner, so as to provide for a certain amount of vertical motion. Below the beam, and forming an angle therewith, is a blade *C*, provided with a cutting edge at its lower end, which serves to enter the earth more or less deeply as the plough is drawn forward, and carry the excavated material to the surface. At its forward end this blade is braced by means of a support *D*, which is fastened to the beam *A*. At the forward end of the beam *A* is a clevis bar *E*, which is secured at its upper end to draft bar *F*, extending to the rear of the beam *A*. In this clevis bar are a series of apertures adapted to receive a link to which a pulley block is connected. This block serves to receive the cable that is passed to the windlass or drum of the traction engine, for the purpose of drawing the car forward. Owing to the lightness of this plough, it may readily be loaded upon a truck and transported from place to place.



AN IMPROVED DITCHING PLOUGH.





## **Orchard Culture.**

### A COMPARISON OF DIFFERENT METHODS.

#### EFFECTS ON THE ROOT SYSTEM OF THE APPLE TREE.

It is generally well known that fertile soil of good character or texture embraces two substances—organic and inorganic. The organic substance, of which nitrogen is the most important plant food element, is derived from decaying vegetable matter. The inorganic substance, of which potassium and phosphorus are the most important plant food constituents, is derived from mineral sources—chiefly from disintegrating rocks which originally composed the earth's crust. So long as these vegetable and mineral elements are maintained within the soil in undiminished supply, either by natural or artificial means, the soil will retain its original fertility and good physical condition. The retention or perpetuation of these necessary elements and characteristics of the soil by natural means—by the plan of Nature—demands that the soil remain unbroken; that vegetation continue to luxuriate, die, fall, decay and return to the soil. That this natural means of maintaining the fertility and original physical character of the soil is practicable and consistent with high culture of fruiting trees, plants and vines, is affirmed by one class of culturists and opposed by another.

Upon the other hand, in order to retain the fertility and good physical condition of the soil under regularly repeated ploughing and cultivation, artificial measures have to be employed. For not only will the organic, vegetable, or nitrogenous matter be, in time, exhausted through the "burning out" process of decomposition incident to and hastened by continuous clean cultivation, but the store of inorganic substances—phosphorus and potassium—will become lowered by repeated cropping under a method which does not especially favour the gradual unlocking and rendering available of the mineral plant food which is liberated by the decomposition of the store of vegetable fibre which should continually be replenished, and which is not replenished by continuous, clean culture season after season. The retention of fertility and a good physical condition of the soil by artificial means properly suggests that short, early, annual periods of clean culture be followed by the sowing of some crop—preferably of leguminous plants such as the clovers, vetches, cow peas or soy beans—which will make a good growth during late summer and early autumn, cover the surface of the ground in winter and be ploughed under the following spring, to be, in time, followed by the recurring period of cultivation and later, again, by the sowing of the annual cover-crop.

Therefore consistent care and management of the orchard soil is invariably planned to provide for the restoration to the soil of the elements of fertility taken away by cropping, and to perpetuate the peculiar and necessary soil texture that is only to be found where decomposed vegetable matter is present in ample proportion.

The awakening interest in these phases of orchard management received an impetus and was brought to an issue, in the United States, when, within the past ten years, certain prominent and successful orchardists of New York and Ohio—Grant Hitchings and F. P. Vergon—came boldly and almost simultaneously to the front as champions of the so-called “sod-mulch” or “grass-mulch” methods of apple orchard culture. The idea was regarded by life-long believers in and advocates and teachers of scrupulous, clean cultivation as “cultural secession” pure and simple. However, so ardently and practically did the gentlemen referred to support their claims for mulching by quite regularly producing and exhibiting apples of the highest degree of perfection in colour and quality that others, who were unprejudiced, foresaw the possibilities for adapting such a plan to particular situations where annual ploughing and cultivation are difficult or even an utter impossibility, and became willing to investigate the matter.

In these terms Messrs. W. J. Green and F. H. Ballou, of the Ohio Agricultural Experiment Station, preface an interesting preliminary account of the results obtained from a study of apple orchard culture test plots instituted at their Station for the purpose of investigating the advantages of the mulching system of apple orchard culture advocated by Hitchings and Vergon. In the spring of 1900 was planted a block of one hundred and sixty apple trees—eight rows of trees with twenty trees in each row. This block of trees was divided, crosswise, into four plots of forty trees each, referred to respectively as No. 1—“cover-crop plot,” No. 2—“continuous clean culture plot,” No. 3—“sod-culture plot,” and No. 4—“sod-mulch” or “grass-mulch plot.”

Describing the different methods of apple orchard culture in detail, the bulletin refers to the

#### THE COVER-CROP METHOD

as safe, practicable and excellent while the orchard is young, where the ground is level or comparatively so, or even upon a surface that is quite sloping or irregular, providing the soil be not of such a character as to wash readily by flooding rains. In detail, the cover-crop culture of orchards consists in ploughing or, preferably, disking the ground as early in the spring as the soil is in condition to be easily worked. When ploughing is practised it is well to annually reverse the order of breaking the ground, throwing the soil toward the trees one year and away from them the next. This tends to keep the general surface from becoming irregular much longer than when the same order of



ploughing is followed year after year. As ploughing close up to the bodies of the trees cannot be safely done through danger of injury by the traces bruising and mutilating them, it is almost necessary to have a one-horse breaking-plough to finish up the rows. Following the ploughing or disking, the surface is kept clean and mellow with a spring-tooth harrow, fine-tooth cultivator or weeder. Cultivation is continued until the middle of July or the first to the middle of August, when some cover-crop should be sown and allowed to take possession of the soil during the balance of the season.

A good cover-crop will hold the leaves and snow, thereby lessening the depth of alternate freezing and thawing. The turning under of a few such crops will make the soil spongy and friable, increase its moisture holding capacity and render it more able to resist drought. The cover-crop plan is probably the nearest approach to absolutely clean cultivation of orchards that the orchardist can safely make. It meets not only the requirements of those who delight in keeping their orchards in a neat and sightly condition, but it provides generously for the needs, present and future, of the trees and orchard, by the gradual accumulation of a surplus of plant food and vegetable fibre in the soil.

#### THE CONTINUOUS CLEAN CULTURE METHOD.

While the continuous clean culture method has long been followed in favourable localities, it is safely applicable only where the soil is level, fertile, and naturally well supplied with humus. Even under these favourable conditions, the vegetable matter in the soil is sure, in time, to become depleted. For upland soils, where the surface is sloping, steep or broken, it would be a serious mistake to adopt continuous clean cultivation of the orchard.

Plot No. 2, in the Station culture test, was designed to be kept under continuous, clean culture without cover-crops or the addition of fertility or vegetable matter in any form. The ground was to be ploughed in the spring, the surface levelled with the harrow or cultivator and kept mellow and free from weed growth throughout the growing season, or until early autumn, when cultivation was to cease, and the soil to lie undisturbed and uncovered until the next spring, when the same programme was to be repeated.

After four seasons' trial, continuous clean culture was abandoned as a practice not to be considered in connection with careful orchard culture. After many tons of soil had been swept away by the rains, exposing the roots of the trees in numerous places, and the surface cut, here and there, by great yawning gullies in which many loads of brush, prunings and other coarse matter were necessary to fill the ditches so that a team might pass over, the method was discontinued in alarm and the plot thereafter included in the cover-crop area where, it is hoped, the loss and injury may be repaired in some degree. The great loss of soil, however, can never be recovered.

---

#### THE SOD-CULTURE METHOD.

In Plot No. 3 the apple trees were planted in generous excavations, directly in the sod. Immediately following the planting of the trees a circular area of ground, three or four feet in diameter, was spaded or dug about each tree, and the spaces have annually been kept clean and mellow by frequent use of hoe or rake, throughout the growing seasons. The grass upon this plot has been cut three or four times each season since the trees have been planted, keeping the surface smooth and sightly in appearance. The grass, as cut, is allowed to lie where it falls, thereby adding a mulch to the entire surface, through which the new growth pushes up with increasing vigour. No fertility has been added to the circular, cultivated spaces, which are gradually enlarged to correspond with and to equal the diameter of the head of the respective trees.

This method was not designed to meet the requirement of the commercial grower whose considerable areas of ground are easily and safely tillable under the cover-crop method, or even for the grower whose land may be easily mown over with the machine, and to whom material for regular and heavy mulching of the trees is available. The sod-culture method is the most expensive and laborious plan of culture of the four tested at the Station and described in this report. It is stated that it may be utilised to advantage upon small, very rough or stony areas, where mulching material is not available. It also fully meets the requirements of those who desire to grow tree fruits about the home grounds, where the presence of poultry would render mulching undesirable, and where the utmost neatness and sightliness of the grounds and lawn are considered of equal importance with good care of the trees.

#### THE SOD-MULCH METHOD.

In plot No. 4, as in plot No. 3, the trees were planted in sod. Instead of spading and cultivating circular areas about each tree these spaces, of similar size, were at once heavily mulched with straw. The stems of the trees were enclosed with fine-meshed, wire-screen cylinders, to prevent injury by mice or other rodents. The grass in plot No. 4 is also mown three or four times each season; but, instead of allowing it to lie where it falls, as in plot No. 3, it is raked up, divided, and used to maintain the mulch about the trees.

"This method," the bulletin remarks, "is admirably adapted to orchards on sloping or steep ground where cultivation cannot be easily or safely performed. It is no less well suited for well drained, level land, and has certain advantages wherever it may be employed. There is no system of orchard culture that will permit of keeping the orchard area in so sightly a condition if the programme of culture be fulfilled. Orchard operations, such as pruning, hauling out brush, spraying, gathering and hauling out fruit, etc., may be done at any time in the season,

even when a very rainy season prevails, or immediately following a soaking rain. Horses, tools, wagons and men alike escape the inconvenience of soft ground and mud."

The first effect of a heavy mulch is the conservation of moisture by the prevention of evaporation of water from the soil of the area mulched. The surface of the soil is kept comparatively moist, and the rapid decay of the vegetable matter, which lies in contact with this moist surface soil, not only provides accumulating humus and plant food, but the chemical and bacterial action in the soil beneath, favoured by the soil covering and its decomposition, results in the liberation of mineral elements of plant food and the formation of nitrates that otherwise would not occur, or would be so slow as to be of much less immediate benefit to the growing trees.

---

## THE ROOT SYSTEM OF THE APPLE TREE.

---

### EFFECTS OF DIFFERENT METHODS OF CULTURE.

The great interest at present manifested in orchard culture has brought up many questions relative to the economic management of orchard soil and the influence of different methods of culture upon the root growth of fruit trees. It is frequently urged that by annual ploughing and clean cultivation it is possible to keep the root system of the trees at a greater depth—at a lower level in the soil—where they will be less likely to suffer from extremes of drought, heat and cold. The adherents to the practice of clean culture furthermore urge the point that the system of mulching results in alluring the entire root system—and especially the feeding rootlets of the trees—dangerously near to the surface of the ground, and that through failure to continue the practice of mulching after having adopted and followed it for a period of time, the trees will be sure to suffer from the effects of drought, heat and cold.

As a result of this interest, inquiry and discussion pertaining to soil culture and management, and the effects produced by seemingly opposed systems upon the root development of fruit trees, a careful investigation of the position and distribution of the roots of apple trees under different methods of culture, was conducted in the Ohio Experiment Station orchard culture plots. The results of these investigations, which are published in the bulletin above referred to, tend toward a refutation of the claims of the devotees of regular, annual ploughing and clean cultivation of orchards, as cited above. The following is given as a summary of the results of the investigations:—

1. The main root systems, of apple trees, under the different methods of culture, were found to be at a surprisingly uniform depth—the greater portion of the roots, both large and minute, being removed with the upper six inches of soil.



2. The fibrous or feeding-root system of a tree under annual ploughing and clean culture with cover-crops, practically renews itself annually—pushing up thousands of succulent, fibrous rootlets to the very surface of the soil where they actually meet with the steel hoes or spikes of the cultivator or harrow, especially in seasons when moisture is abundant. Apparently but a small percentage of these rootlets penetrate the lower, more compact, colder soil, but they come to the surface soil in countless thousands of thread-like extensions, to feed where warmth and air and moisture combine to provide the necessary conditions for root pasturage. As a matter of fact, these feeding rootlets are cleanly pruned away by the ploughshare each succeeding year, and without apparent injury to the trees or crops; but they have succeeded in performing their function, and their places are occupied, the succeeding season, by a new generation.

3. The presence of a net-work or mass of fibrous rootlets upon the surface of the soil beneath a heavy mulch, and in the heavier portions of the mulch itself, is no indication whatever of the lack or absence of feeding rootlets in the upper soil; and the partial or even total destruction of these surface feeders, which occurs during the hotter, dryer months of summer and during the severe cold of winter, does not cause the trees to suffer in the least degree, as there was invariably found to be a wonderfully dense network of rootlets occupying not only the upper two inches of soil, but also the succeeding four inches of soil below the upper two inches.

4. Inasmuch as the surface rootlets, in or beneath a heavy mulch, do not increase disproportionately to those beneath the surface soil, it becomes evident that the removal of the mulch, or even a change from heavy mulching to the clean-culture-cover-crop plan, would not be as disastrous as has been generally supposed.

5. Under the “sod-mulch system” of culture the trees have uniformly made a heavier, more vigorous growth than under any other system of culture. This is no doubt due to the certainty and uniformity of the generous store of fertility right at hand—the concentration of an abundance of plant food where it is most available and the consequent presentation of conditions, beneath the mulch of vegetable matter, especially favourable to a healthy, unstinted, continuous nourishment of the trees.

---

Messrs. Hayward, Young & Co., P.O. Box 169, Port Elizabeth, will be pleased to send one of their calenders for 1908 to any farmer applying for same.

## **Retirement of Mr. J. C. Parker.**

It falls to our lot this month to have to record the retirement of Mr. J. C. Parker from the position which he has so well filled in the past, and in connection with which his name is perhaps best known to Colonists—namely, that of Supervisor of Trout Hatcheries. What he has done for the Colony in the direction of trout acclimatisation is known generally by the multitude, but only realised in its full significance, and in the work which it has entailed, by the few. It was in 1882 that Mr. Parker first conceived the idea that it might be possible to introduce trout into Natal. He had then seen most of the rivers of the Colony, and their appearance gave him the impression that they would be suitable for trout; and he accordingly communicated with the Editor of the *Field*, asking him how he should proceed. His letter was passed on to Sir James Maitland, owner of the Howietown fisheries. Sir James Maitland interested himself in the idea, and made Mr. Parker a present of 10,000 trout ova. Unfortunately, only eighteen of these eggs hatched, and the alevins were so weak that they only lived a few days. Sir James Maitland thereupon advised Mr. Parker to try again, and in 1883 he sent him another consignment of ova—ten thousand again—but these fared no better than their predecessors.

We next find the Legislative Council placing £500 at the disposal of a committee for the introduction of trout—a committee consisting of Mr. C. A. S. Yonge, M.L.C., Lt.-Col. Henry Vaughan, R.A., and Mr. J. C. Parker. A site was selected on Mr. Hutchinson's farm, "Boschfontein," the stream to be used for the hatching boxes being fairly clean, with a temperature varying from 56 degrees to 64 degrees. On the 8th March, 1890, the first ova arrived at the hatcheries; and since then various importations, both from Great Britain and from Cape Colony, have been made, with the result that now nearly all the chief streams in Natal have been stocked. Of these, the Umgeni, Mooi, and Bushman's Rivers may be singled out as the best trout streams in the Colony at the present time.

In the course of a report on the present position of trout distribution in Natal, to the Minister of Agriculture, Mr. Parker says: "When the Government, in 1890, began the work of introducing trout into Natal rivers, it was understood that they desired to provide a means of sport for the people of the Colony, and to make the Colony a little more attractive to visitors. In part these objects have already been attained. It may be affirmed with confidence that in a few years wherever a man may be, between Ingogo and East Griqualand, he will be within easy reach of good trout fishing. My experience leads me to

believe that all the streams rising on the Drakensberg are good trout streams. All the streams that rise between the Drakensberg and the Coast—such streams as the Umlaas, Illovo, and Karkloof—are not trout streams. Anyway, trout do not seem to live in them. It is the nature of the water. There would appear to be something in it that the trout do not like. The temperature of the water in any river in Natal at the hottest time of the year—the month of February—does not rise above 72 deg., and trout will live in that.”

Trout have been placed in the following rivers, viz., Ingogo, Incandu, Pemvaan (near Vryheid), Mweni, Lembonja, Little Tugela, Bushman's River, Umvoti, Umsindusi, Insinga, Loteni, Inkonza, Ipolela, Larana, Umlazi (Camperdown Reservoir), and Blackwater (tributary of Umtamvuna), and in the Dundee Reservoir. Mr. Parker says that, if any more streams have to be stocked with trout, there are two ways in which the work may be done. Young fish may be caught in the nearest stream that is well stocked, placed in barrels and transported to their future home. The upper waters of the Umkomaas have been stocked in this way with trout caught in the Mooi River by Messrs. Brook and Tod. The alternative is to use a floating hatching box, which Mr. Parker says has been highly successful in Cape Colony.

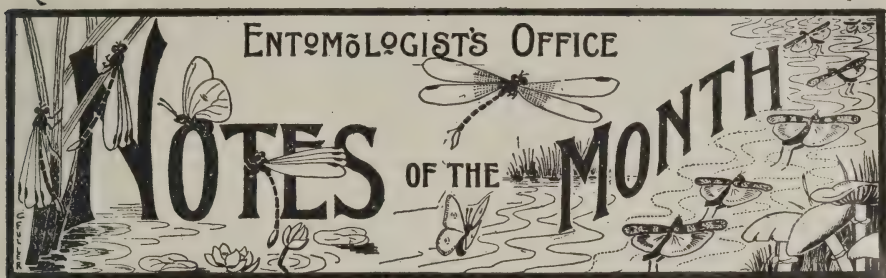
---

In canning tomatoes, have the tomatoes of a uniform ripeness. Pour boiling water over them to remove the skins. When peeled, place in a granite kettle and heat slowly without adding any water. A sprinkle of salt may be added. Boil for half an hour and seal hot.

---

The *Gardeners' Magazine*, in its issue of the 7th December, says:—“When in the neighbourhood of Perth in September last we had an opportunity of seeing a fine crop of a new potato of much promise, and known as Fair Maid. This variety belongs to the main crop section, and has rather large, pebble-shaped tubers, with shallow eyes, and distinctly handsome. Within the past few weeks we have received from the raiser a basket of tubers to enable us to test the merits of the variety when upon the table, and as the result of the test we are able to speak in appreciative terms of the quality of the variety Fair Maid. The raiser, Mr. Bain, who occupies an important position in the establishment of Freeland's, For-gandenny, has in this variety good cause to be gratified with the result of his endeavour to improve the noble tuber.”





## **Notes of the Month.**

### **Fruit Fly and Japanese Plums.**

A case of Wickson plums submitted at the beginning of the year, which ripened up within a very few days, proved particularly interesting in so much that, whilst all were apparently sound and good when received, nearly the whole of them proved on ripening to have been struck by fly. Many were also invaded by the caterpillar of the so-called Natal Codling Moth. In every instance both maggots and caterpillars were very small and only a few days old. The point of attack was almost invariably just below the apex of the fruit and upon the riper side. From all appearances the fruit was not stung by fruit-flies nor were the moth's eggs laid upon it until within a week of picking. From other sources I learn that Wickson's picked earlier than these were not struck.

Although the Satsuma suffers a great deal from fruit-fly, there is an idea abroad that Japanese plums are more or less immune to the attack of fly. Mr. A. P. Smith gives a rather ingenious explanation of the origin of this immunity. He points out that, upon the whole, Japanese plums differ from the majority of fruits in the rapidity with which they ultimately ripen up. Until quite mature, they remain hard; and, because of their firmness and the smooth, waxy surface of the fruit, the fly is quite unable to insert its ovipositor, by means of which organ it punctures the fruit and deposits its eggs. He adds that he has often observed the fly endeavouring to strike Japanese plums, and has seen the ovipositor "slipping" with each effort.

### **Grape Vine Diseases.**

During the present month (January) grape vines are suffering considerably from fungus diseases. A great number of complaints have come from the Dundee district, and matters appear to be no better in the

environs of Maritzburg. The principal trouble is undoubtedly Anthracnose or Black Spot; mildew is also prevalent, and several cases of berry rot have been brought to my notice. To a great extent one must attribute the prevalence of these fungus troubles to the wet season we have experienced, and they are more virulent because of the fact that very few grape vines receive those preventive treatments which the nature of our climate calls for. Many vines, too, do not lend themselves to proper treatment, being grown rather as house decorations than fruit producing plants. Again, susceptible varieties are more commonly grown than sorts which are more adapted to local conditions. The question of suitable varieties is one that calls for consideration, and I would, in this connection, be very glad to have the experience of growers possessing other varieties than the Hanepoort.

The treatment for grape disorders of fungus origin have already been fully dealt with in the *Journal*, and the consistent following of the suggestions has, in some instances, met with remarkable success even this season.

There are several different forms of mildew which attack the grape, some being more pernicious than others. The diseases are caused by distinct fungi, the differences being mostly microscopic in character. Being extremely anxious to ascertain what forms of mildew do exist in Natal, an appeal was made through the medium of the daily press to those possessing grape vines to furnish examples coming under their notice for determination. This appeal has not met with a very hearty response it is true, although a fair number of specimens have been sent in. It is of very great importance indeed to ascertain if the mildew—*Plasmophora*—exists in Natal or not. The presence of this fungus amongst the vines in the more eastern parts of Cape Colony has caused immense trouble and loss of trade to the inhabitants of the infested areas. This is not so much due, I believe, to the actual damage done by the fungus as it is to the action taken by the Transvaal and other administrations to prevent the spread of the disease into their territory. So far the disease does not appear to be here, but at the same time it is very necessary to be in a position to say with certainty that it is not present.

### ***Millepedes or Thousand-Legs.***

Millepedes or thousand-legs and centipedes may be described as first cousins to each other. They are not insects, but together form a class in the same sub-kingdom as the insects: the *Anthropoda* or jointed-footed animals. The difference between centipedes and millepedes is quite well defined: the former creatures are more or less flattened and possess but one pair of feet to each body segment, whilst the latter have two pairs and are very cylindrical. Further, the centipedes are predatory creatures and

friends to the farmer, whilst the millepedes, on the other hand, are plant-feeders and often mischievous. As these creatures have an enormous number of segments in their bodies, they are certainly well provided with ambulatory appendages. In fact, in the millepede, we see one extreme and in the snail, which has but one foot, the other extreme; in the matter of footed creatures: which reminds one of a story of an early morning conversation between a Millepede and a Snail, of which the following scrap was overheard: *Mr. Millepede*: "Good morning, Mrs. Snail, and how are you today?" *Mrs. Snail*: "Thank you kindly, Mr. Millepede, but I am not at all well; I feel as if I had one foot in the grave already." *Mr. Millepede* (cheerfully): "Oh, indeed. But I shouldn't worry about a little thing like that, you know!"

---

Quite a number of complaints have reached this Office this summer regarding damage done to potatoes and garden plants by millepedes; but, generally speaking, the amount of mischief they accomplish does not amount to a great deal, year in and year out, in the Colony. In Europe they are, however, better known as pests in the field, garden and greenhouse. Millepedes deposit their eggs in the ground, and the young which hatch from these are similar in appearance to their parents, but have not so many segments to the body and, consequently, not so many feet. The growth of a millepede is somewhat extraordinary; the body lengthens out behind by the addition, or rather growth, of segments between the penultimate and the last joint. They breed all the year round, probably more abundantly during the spring and summer. The familiar giant millepedes, so common in the Colony, especially on the Coast, are interesting inasmuch as they are often infested with a large tick-like parasite.

---

As there are a great number of species, their habits naturally vary, and little, if any, exact information has been collected regarding those which are destructive. Generally speaking; it may be said of all of them that they feed upon living plants and decayed vegetable matter. They are frequently found in abundance in heaps of rubbish containing garden refuse and in leaf mould, more especially in damp places.

---

A great deal cannot be said regarding the treatments to be adopted to control this nuisance. Places in which they harbour, such as the above, should be removed or treated with gas-lime. According to English experiences, liming the soil is the only treatment of practical use upon a large scale; lime being regarded as the great specific against millepedes. Soot and water applications are also said to keep garden plants free from attack for temporary periods. Trapping is greatly favoured, especially in green-houses and in gardens. The creatures are fond of sheltering during the day under odd bits of stone and boards lying on the ground, and



numbers can often be collected and destroyed by placing about upon infested soil short lengths of plank. Millepedes are notoriously fond of sliced potatoes and mangolds, so the traps can be made more attractive by baiting with such. As they are also known to eat both the above vegetables when poisoned, it is just as well to soak the slices thoroughly in Paris Green or Arsenite of Lead—say one to two ounces of either poison to a paraffin-tinful of water. Whilst soaking, the mixture should be occasionally stirred, as the poisons are insoluble in water and are apt to settle to the bottom of the vessel. An attractive bait, to be laid at dusk, consists of a slice of poisoned potato, covered by a cabbage leaf. Another bait or trap can be prepared by scooping out a potato, turnip or mangold and burying it just under the soil, the hollowed surface being placed downwards. This trap can be either poisoned or examined daily for millepedes.

---

### **The Orchard.**

Now that a greater interest is being taken throughout the Colony in the cultivation of fruits, and, further, owing to the very large number of new varieties which have been introduced during the past five or six years, both by nurserymen and farmers, it is very desirable that fruit growers and those interested in the production of fruit should communicate their experience as frequently as possible to the Department of Agriculture. Information from all sources is particularly requested regarding the behaviour and time of ripening of the various varieties, in order that the data so collected may be tabulated and placed upon record for future use and guidance. Fruit growers should make a point of submitting all matters affecting their interests to the Department, and all letters on the subject of fruit and its culture will be suitably acknowledged. It must be realised that fruit-growing is very much in its infancy in Natal, and there are a hundred and one questions in relation to Pomology calling for attention. Unfortunately no local records of any study of these are available. It therefore comes to this, that the growers can be of the greatest, in fact the only true, assistance towards building up some knowledge for the guidance of others, if they will only expose their views, indicate where the Department can really assist, and contribute their experience. If all will furnish the Department with their experience and these contributions are studied and placed upon record, they cannot but be of the greatest value, not alone to those starting, but also to those who have grown fruit for years.

---

The naming of fruits is a question which is daily growing in interest and importance, and an effort is being made to determine the various kinds of fruits which we have in this Colony. To this end fruit growers are particularly requested to send two or three typical examples

of their various fruits to the Department. These may be mailed or posted in small packages free—addressed O.H.M.S. Department of Agriculture, Maritzburg, with the words “Fruit Specimens from.....” written on the left corner of the envelope.

---

It is a popular fallacy in Natal, engineered by some, for their own purposes perhaps, that the ability to name any fruit off hand is the hall mark of the horticultural adviser. As a matter of fact the science of fruit culture or “Pomology,” as it is called, is divided into three well recognised divisions, in any one of which a man may be proficient, and, at the same time, without any loss of dignity or prestige, admit himself ignorant of one or both of the other two. These divisions are (i.) the classification and naming of fruits; (ii) practical orchard work; (iii.) the commercial section. Few, if any, of the most skilful systematists or those who make a special study of the classification of fruit, will name fruit off hand, unless it be some common or very well known sort to them. The more reliable such men are the more do you find them hesitating to glibly attach a name to a fruit—one of the easiest things in the world to do where there is practically no one to dispute the naming.

---

There is another point to be borne in mind, this is, that very many fruits have numerous synonyms; the green gage plum, for example, is known by no less than fifteen different names. In a climate such as ours, it is extremely probable that sorts which may be standard fixed varieties in Europe and America will vary from the original type. Again, in Natal, the fruits have been imported from many sources: from the Cape, Europe, North America, and Australia; and, where they are known by name, that name is the one which the nurseryman’s label bore. Without any disrespect to the nurseryman—for I am sure that most of the Natal nurserymen will admit it—the names on tags of imported trees cannot be entirely relied upon.

---

It will therefore be seen that there are sound reasons for an endeavour being made to classify and name, for the guidance of those taking up fruit culture or the extension of their orchards, the varieties which are now doing well in the Colony. Such a course the Department of Agriculture proposes to adopt, and it will depend upon the co-operation of those interested in the growing of fruit in this Colony what progress is made in the matter. If fruit is sent in for study, it will not only be carefully described and recorded, but specimens will be suitably preserved for future reference, and, as far as practicable, models made to serve as permanent records.

## **Natal Land Board.**

---

### MONTHLY MEETING.

---

On the 7th, 8th and 16th January, the usual monthly meeting of the Land Board was held in the office of the Surveyor-General.

Twenty-eight applicants for land were interviewed by the Board, sixteen of whom were passed as suitable settlers. The applications from the others could not be dealt with at the time as they had omitted to provide themselves with documentary evidence as to their capital and stock. They were informed, however, that their applications would be recommended providing they complied with the Regulations, and the necessary documents, to be forwarded by them, were found to be satisfactory. It was pointed out that if applicants, appearing before the Board in support of their applications, would endeavour to bring with them the particulars which they were asked to furnish, a considerable amount of time and trouble would be saved. A number of applicants who had previously appeared before the Board were finally passed on the production of satisfactory evidence with reference to their capital and stock.

Judging from the number of applications for land, and inquiries regarding land settlement in Natal, there is every indication of a large number of intending settlers coming forward. During the past four weeks the Board has been in correspondence with over four hundred further applicants, and numbers of inquiries are daily coming to hand.

The Board considered a report received from the Superintendent of Settlements, Mr. A. H. Bennett, containing his recommendations with regard to the sub-divisions of the land known as "Varkensfontein" near Colenso. The Board approved of his suggestions, and has asked the Government to have the land advertised in order that applications for same may be considered. It is intended to have the land in question cut up into about thirteen farms varying in area from 350 to 840 acres.

It may be mentioned that the farms known as the Umtwalumi College lands, the Illovo farms, and a large area of land consisting of 86,000 acres in the neighbourhood of Empangeni, Zululand, will shortly be advertised as available for allotment.

A number of applications have already been received for some of these lands, but could not be dealt with pending the lands in question being advertised.

The next meeting of the Land Board has been fixed for Tuesday, the 4th of February, 1908.



## **Road Boards.**

THE *Government Gazette* of the 31st December contained notification of the appointment of the following gentlemen as members of the Road Boards of the Divisions mentioned:—

*Umgeni*.—E. A. Foxon, J.P.; P. F. Payn, J.P.; Thomas Stead, J.P.; Robert Comins.

*Ixopo*.—W. K. Anderson, J.P.; G. H. Cooper, J.P.; E. A. Garland, J.P.; C. E. Hancock, J.P.; A. H. Walker, M.L.A.

*Ngotshe*.—J. J. C. Emmett, J.P., M.L.A.; T. I. H. Steenkamp; John Schoon; H. J. Jacobz.

*Paulpietersburg*.—N. J. Els; J. B. Rudolph, J.P.; C. H. C. Niebuhr, J.P.; A. W. P. Bester; G. C. Viljoen.

*Klip River*.—J. Farquhar, C.M.G., M.L.A.; J. G. Bester; A. W. Illing; W. Leathern; J. H. Newton.

*Lion's River*.—J. Morton, sen.; T. Morton; H. Nisbet; W. H. Sutton; H. J. M. Mackenzie, J.P.

*Vryheid*.—H. J. Harris; J. Hattingh; C. L. Mossop; G. M. van der Westhuizen.

*Impendhle*.—T. Fleming, J.P.; W. J. Fly, J.P.; D. Tootell; J. McLean; C. W. Roberts.

*Krantzkop*.—L. M. J. van Rooyen, sen.; W. E. Keyter; R. G. P. Martens.

*Inanda*.—W. J. Thompson, J.P.; L. Acutt, J.P.; C. R. Bishop, J.P.

*Camperdown*.—H. Baker; J. W. Harvey, J.P.; R. McNaughton.

*New Hanover*.—E. Peckham, J.P.; J. A. Westbrook; W. Meyer; H. Mummbrauer.

*Newcastle*.—G. Langley; W. F. B. Sutherland; J. P. Vos; W. Molier, J.P.

*Bergville*.—P. J. J. Bester; G. H. H. Coventry; H. Jackson; D. D. Newton; F. Zunckel.

*Umvoti*.—A. Laatz; W. J. Slatter; F. Handley; J. J. Meek.

*Umlazi*.—F. Stevens, C.M.G.

*Lower Umzimkulu*.—W. N. Mills; D. C. Aiken; N. C. T. Harper; C. Manning; E. Haajem.

*Alexandra*.—R. C. Archibald; H. Bazley, J.P.; A. Blamey; H. Reynolds; B. C. Shooter.

*Dundee*.—Dr. A. Schulz; F. Turton, J.P.; R. J. du Bois, J.P.; H. Wiltshire, J.P.; H. Greenhough.

*Alfred*.—Hon. W. A. Hutchinson, M.L.C.; G. Larkan; A. G. Prentice; R. E. H. Fann; W. P. Bouverie.

## **Alexandra Agricultural and Horticultural Association.**

---

### ANNUAL PRESIDENTIAL ADDRESS.

---

At the annual general meeting of the Alexandra Agricultural and Horticultural Association, held recently at Umzinto, the President—Mr. Wm. Thompson—delivered the following address:—

“It is within your recollection that, owing to the very unsettled state of our own district, as well as other parts of the Colony, we, along with many other societies, were unable to hold a show in 1906. Another great drawback we have suffered from, which greatly affected our show last year, was an outbreak of East Coast Fever within this county, near the Induduta, early in October last year. It goes without saying the outbreak was a serious calamity, but, owing to the prompt and effectual steps taken by the Government and the energetic way in which the Veterinary Surgeons and the County Committee elected for that purpose have worked together for the suppression of that fell scourge, the infected cattle were killed, and cattle passed through the temperature camps, with the result that no further outbreak occurred. Your committee hope, however, that the happy immunity will not tend to less vigilance in guarding against any possible reintroduction of the disease. Yet, though the county has had some serious drawbacks to contend with, it has, upon the whole, made good, sound progress, and its future prospects are hopeful.

“Since the means of transport has been provided, the production of mealies has increased very greatly—already many thousands of bags have been sent away, which, but for the railway, would not have been grown—the excellent arrangements made by the present Government enabling the placing of our grain on the London market at so low a cost that growers can realise paying returns. Our present production will certainly be very greatly increased. Farmers can now increase their production to any extent without fear of overstocking the market.

“In this connection let me say a word or two about the narrow-gauge railway now in course of construction through this and the adjoining county, Ixopo. Until a year or two ago, the prospects of getting that line seemed very visionary, and most people were very sceptical as to the utility of what they were pleased to call a toy line. To-day the earth-works are completed, and the laying of the rails will soon be finished from end to end. The engine with ease takes loads of 70 tons up the unballasted or partially ballasted line, which shows that it will be amply

sufficient for all our requirements for many years to some; and the effect it will have in the near future may be judged by the way in which farmers are already planting wattles and other exportable produce.

"Our last show naturally suffered much by the absence of all cattle, caused by the East Coast Fever restrictions, but in other respects it was very good. The exhibits of produce, manufactures, fruit, vegetables, etc., were excellent, as was shown by some of the exhibits having afterwards taken prizes at the Durban show. The manufactures did the ladies much credit, not only by their excellence, but also by the smart way they were put on. The citrus fruit drew much attention, and were an excellent show. Mealies were also very good, quite equal to the best in the Colony, and quite upset the fallacy that coast grain is not equal to that produced up-country. In horses we had some strong and well-contested classes, and especially so in riding hacks.

"In the foregoing references to the various products it may seem strange to pass over our chief one, sugar, but its excellence is so well known that it is superfluous to refer specially to it, beyond saying that good, solid progress is being made by our planters, both in the extent of their cultivation and in the improvement of machinery and plant.

"Cotton is still being cultivated in the county. The plant, under proper conditions, will grow and produce well, and its produce is of excellent quality, as is shown by the high prices at which it is sold, and it is hoped the enterprise may turn out a commercial success.

"The finances of our Society are not in a very flourishing condition, as will appear in the accompanying balance-sheet, the balance on hand being £96 16s. 7d.

"Your committee desire to record their thanks to the donors of the several special prizes; and this Association desires to record its thanks to the Government for the furtherance of the agricultural interests of the Colony."

---

---

The formation of a company for the establishment of a hemp industry in Roumania is announced. The company has a capital of 640,000 fr.

---

What is reported to be the largest apple tree in the United States is in the garden of Mr. Charles Waterhouse at Southington, Connecticut. It has yielded fifty bushels of apples this season, and the upper branches are still bearing fruit.



## **Richmond Agricultural Society.**

### **PRESIDENT'S ANNUAL REPORT.**

At the annual meeting of the Richmond Agricultural Society, held on the 14th January, the President, Mr. John Marwick, read the following report:—

“Another year having passed, it is my duty to again furnish you with a report. Our show was held on July 25th, and, notwithstanding the cattle classes having been left out, on account of East Coast Fever, was quite a success.

“*Horses.*—The show of horses would have done credit to any show in the Colony. The entries were numerous, and the quality all round of a very high order. I say this without any spirit of boastfulness; it was the best exhibit of horses seen at any show in the Colony last season, especially the breeding classes. The large towns being naturally the goal of the cream of the riding and driving horses, we look for them there, but last show would have done credit in even those classes to Durban or Maritzburg.

“*Cattle.*—There were none shown.

“*Sheep.*—The show of these consisted of the exhibits of one man, for which I am sorry, as there are several others in the district that might have shown, and I am sure Mr. Lewis would have been pleased to welcome competition. When he heard that he was the only exhibitor, he hesitated about bringing his entries, and it was only after being urged by the members of the committee that he exhibited. I hope that he and all those who own sheep in the district will come forward next show.

“*Pigs.*—As usual, our show was good, but the numbers forward could have easily been doubled had the local breeders done their duty.

“*Poultry and Dogs.*—I will comment no further than to say they were of the usual country show quality.

“*Manufactures.*—Quality good, but quantity exhibited meagre.

“*Produce.*—Entries numerous, and quality left very little to be desired, especially the mealies.

### **GENERAL.**

“I am sorry to have to record that East Coast Fever is still menacing the stock of the Colony, and, unless the Government adopt more vigorous methods than the present ones, I am afraid it will go right through the country, or be hanging over parts of the Colony for an indefinite time. Although the Government profess to have adopted the ‘stamping out’ method of dealing with the disease, and have obtained the necessary legis-

lative authority, they seem to be carrying it out in a very half-hearted way, and not proceeding so vigorously as I, for one, expected from a professed progressive Government. There is one phase of this matter that I wish to impress as strongly as I can on everybody, townsman as well as farmer, and that is the peculiar position we are in in respect to the cattle of this Colony. The cattle here are an asset that, should they unfortunately be exterminated by East Coast Fever or any disease, could not be replaced from any part of the world, on account of redwater, so it behoves everyone to do all in his power to save them. The position as regards cattle here is unique, allowing for, say, 5 per cent. of the cattle which could be imported living, which is a liberal percentage. How long would it take to re-stock the country, and what would prices be meantime?

"You are no doubt aware that the Government has 'retrenched' practically all the

#### ROAD PARTIES.

While admitting that considerable economy could have been effected on the roads, I think it very unwise to take practically everybody off them. The older Colonists among you will be able to gauge in their mind's eye what the roads will soon be like with a wet spell; now, with East Coast Fever knocking about, one does not want to be trekking oxen to the railway stations oftener than necessary, but with bad roads it will mean half-loads, and two trips where one would have done.

#### MEALIE EXPORT.

"You are all aware that large quantities of mealies have been exported to Europe this season, and most people give the Government credit for having created this outlet for our supplies. The Government is entitled to take credit for reducing the railway rate and arranging for cheap ocean freight, but nothing more. The mealies would have had to go in any case, even at the rates that used to rule. I here wish to call the attention of mealie-growers to the fact that prices in Europe this season have been exceptionally high, and if they expect to get the same prices in the future, even if railage and freight be kept at current rates, they are likely to be disappointed. We will have to look round for some better way of disposing of our mealies than exporting at about 6s. per muid. Feeding pigs with them would be better if

#### BACON FACTORIES.

were started. I am extremely sorry that our local factory is standing idle, and I urge upon you the desirability of endeavouring to set it going again. I think it quite practicable for the local farmers to purchase the affair and run it co-operatively. While admitting that the affair is, so to speak, 'flyblown' in the local eye, that is through no fault of the local

farmers nor the soundness of the proposition. It can, I am confident, be made a thorough success if properly managed by yourselves; so think the matter over and get it under way again.

#### GRANTS TO SOCIETIES.

"The Government have notified all agricultural societies that they intend to discontinue the grants. It will therefore be necessary to raise more money locally in future than has been done in the past, and you will require to dip a bit deeper into your pockets for the wherewithal to run the Society, if prizes are to be kept at the old level. I must say that, in view of the lack of interest in the Society, by local people, with the exception of a few who have run the affair, it is a question whether it would not be advisable to close down if more interest and liberality is not shown than has been the case in recent years, as it will be impossible to hold a decent show under present conditions. It is not the farmers alone of whom I complain, but everybody. You can all, with very few exceptions, afford to give quite double your present contributions, and if you do your duty to the district, in which the majority have acquired all they own to-day, the Society will flourish and lack neither finances nor workers. I hope none will take offence at my plain speaking, as none is intended. It is with the object of reminding you all of a duty which you have been thoughtlessly overlooking, and now, having had your attention called to the fact, I hope it will be remedied.

"On behalf of the Society, I wish to tender to Mr. Henry Nicholson, one of the life members of this Society, and Mr. W. C. McKenzie, and the members of their families our sympathy in their recent sad bereavement. I beg to thank the donors of special prizes for their continued liberality, and the interest they have taken in agriculture. Your thanks are also due to the gentlemen who, at considerable trouble and expense, attended the show as judges. Special thanks are due to Messrs. W. P. Payn, C. Nicholson, and R. Nicholson for the amount of labour and time they put into the preparation of the showyard, and to those farmers who supplied natives for those gentlemen to supervise. I personally beg to thank the members of Committee who regularly attended the meetings and carried through the business, for their loyal support, and the Hon. Sec. (Mr. Tom M'Crystal) for his prompt and ungrudgingly-given services, and I regret he has intimated that he is not willing to stand for re-nomination, having completed five years' service in this capacity.

"Four Committee meetings were held during the year, the attendance of members being as follows:—John Marwick, J. W. Flett, and Thos. Marwick, 4; J. W. T. Marwick, W. P. Payn, and T. M'Crystal, 3; H. M. Moyes, C. Nicholson, and Evan Harries, 2; R. Nicholson and R. A. McKenzie, 1; A. W. Cooper, J. W. McKenzie, W. Comrie, J. C. Nicholson,



F. O. Howes, and E. J. B. Hosking, nil. This report having attained much greater length than anticipated, in conclusion I beg to thank you all for having so often given me the position of honour in the Society, and assure you that whatever position I hold—that of a plain committee-man is what I prefer—I will always do what I can to advance the Society's and district's interests."

---

## ***E.C.F. Advisory Committees.***

---

### AMENDED REGULATIONS.

---

THE following amended regulations for the appointment of Advisory Committees under the East Coast Fever Act, 1906, have been approved by His Excellency the Governor in Council. The original regulations appeared in the June, 1906, issue of the *Journal* (p. 666).

1. In every Magisterial Division the whole or any part or parts of which have been declared an infected area or infected areas, in terms of Section 3 of Act No. 54, 1906, there shall be appointed a Committee consisting of the District Veterinary Surgeon and the District Stock Inspector, and so many more elective members, to be elected at an annual public meeting called for that purpose by the Magistrate of the Division, as the Minister of Agriculture may deem expedient, but in no case shall the number of elective members be less than six.

At least fourteen days' notice shall be given in the *Government Gazette*, and a copy of such notice shall be posted on the notice board of the Magistrate's office, and on other public buildings, and shall also be handed to the Police for exhibition to the farmers in their usual patrols.

2. At least one-third of the members of the Committee shall be necessary to form a quorum.

3. In the event of there being more nominations than the number of elective members the election shall be by ballot.

4. Regulations Nos. 1, 2, 3 and 6 of the Regulations published under Government Notice No. 313, 1907, are hereby repealed.

## **Experiment Farms.**

---

### WEENEN.

---

The Curator of the Government Experiment Station, Weenen, reports to the Director of Experiment Stations as follows:—

The weather during the month of December has not been what one would call ideal for growing crops, although rain fell on nine days and totalled 3.55 inches; several were extremely hot, which is not unusual for this district.

The greater part of the month has been taken up with threshing the various wheats, this being a laborious task, entailing transport of the crops to be threshed, which are some distance from the station, and all the straw back again. The seed also had all to be winnowed with another machine as the thresher referred to is an antiquated type, and is not fitted with the necessary cleaning and sacking appliances.

The following varieties of wheats have been threshed during the month: Menenieu, Nicaragua, Silina, Wellman's Fife, (two lots), and Standard Fife. All these varieties, with the exception of Menenieu, were harvested during the month with a reaping machine which was hired for the purpose, and which not only does the work in an expeditious manner, but is also much cheaper than hand labour. Of the latter there is none to spare, the staff of native labour having been reduced at the beginning of the month.

The last sowing of the twenty-two varieties of cotton was made; and up to the present this crop has not made much growth, owing, no doubt, to the dry, hot weather, which is not conducive to the well-being of this kind of crop.

Four acres of "A" Section have been planted with maize (Funk's Yellow Dent). This experiment, as stated in a previous report, is to be a test of best quantities of irrigation water for maize. Four acres of the truck land have also been put in maize as a revenue crop, several bags of meal being required as part of Indian rations during the year.

Land is being prepared for the planting of tobacco, and this work will be pushed on as time and labour allow.

W. HOSKING, Curator.

---

The following is the report of the Orchardist, Weenen, for November and December:—

During the month of November the principal works carried out here have been as follows:—

Ploughing-in beans in Section (1) as a green manuring. The vines, having no trellis upon which to cling, did not seem to be doing as well as they might, so I had poles cut, 6 ft. in length, which were driven in alongside the vines, to which the longest and strongest canes were tied, the smaller ones being removed.

Irrigating and cultivating to keep down weeds was carried on as usual.

We had a few storms during the month, one of which was accompanied with a little hail, which affected the fruit on the weather-side.

The "Early Newcastle" apricots were ripe from about the first to the middle of the month, the "Early Cape" ripening about the end of the month. The fruit was all more or less bruised by hail and unsaleable. A little fruit was sold during the month. A small quantity of strawberries, raspberries, and a few boxes of peaches and plums were sold.

I am very sorry to report that the fruit fly is very prevalent this season; many of the peaches and most of the nectarines have been spoiled.

I find it a very difficult matter to keep the Orchard clean and do other works since the labour here has been reduced to four coolies. There are a few wet places in the Orchard which ought to be drained, as they are affecting the trees close around them, but I cannot attempt draining with the labour at my disposal.

As you know, I was called out with the First Reserves on the 2nd December, and we were not disbanded until the 23rd December.

T. R. M. POLE,  
Orchardist.

---

## ***Forest Officer's Reports.***

---

DECEMBER, 1907.

---

THE Director of Experiment Stations has received the following report from the Chief Forest Officer (Mr. G. H. Davies):—

In response to your request for a digest of the reports of Foresters for December, 1907, of matters of public interest, I beg to state that, owing to recent changes in organisation, the reports to hand are not complete. Several Foresters have failed to send in reports, and, of those who have done so, most confine themselves to mere statements of routine duties performed. The exceptions are as follows:—



Forester Gryspeerd, of Maputa, reports a diminution in the destruction of the wild rubber vines. Forester Purser, of Ngoya, reports the rapid destruction of the Ilala palm, by tapping for wine, on land reserved for forest conservation but not yet placed under control by proclamation as demarcated Crown-forest. This wanton treatment of a palm necessary to native domestic economy for numerous articles of native use—natives used to go to obtain supplies of it to this very place from far distant locations in Natal—is the result of the abolition of the control of chiefs without substituting an equivalent. Magistrates and Police have no time to issue licenses and to control the cutting of this and other indigenous forest produce, and it is therefore wasted. Demarcation as forest reserves is therefore the only remedy; as it will allow me to resume the control I held in 1904 before the authority of Proclamation 58, 1903, was questioned in Zululand. Credit is due to Forester Purser for his former efforts to regulate the exploitation of this product, and for again bringing the matter up for consideration.

Forester Meyer refers to the sowing of acacia wattles at Pongola Bush; and, taken in connection with a report from Forester Fernando, of Ingwangwane, on the Cape Border, it is, I think, necessary to reconsider the question of acacia planting at Crown forests. The demand for wattles of this genus is small, and other things should be tried. Forester Fernando suggests that blue gum saplings would be more suitable, both because of their immunity from insects and rot and of their retention of elasticity longer after cutting. I have already suggested bamboos as the most elastic and suitable of all materials for hut-building. It is important that good substitutes for indigenous trees should be grown at the Crown forests, if the native hut demand is not to destroy the native forests—when such substitutes would become even more necessary. At the same time acacias are useful as quick-growers, of which to throw belts across openings into bush as protection against veld fires, and natives will buy them as poles.

The increase of eland in the Game Reserve at Giant's Castle, under Forester Symons, is also a matter of public interest.

Applications for land adjoining, and in some cases including, native bushes, under the "Closer Settlement" scheme, have been dealt with during the month, and necessitated my proceeding to the Majuba range to inspect forest land, of which ten thousand acres could hardly support a settler. It cannot be too clearly understood that mountain forest land is totally unsuitable for farming, and can only yield temporary pasture to the grazier. Its best return would be by timber, which would benefit the Colony as a whole.

---

## Exchange Reviews.

---

### WHAT OTHERS ARE THINKING AND DOING.

---

THE cultivation of the olive is attracting attention in the Western Districts of the Cape Colony, and, in response to many requests which have been received for information on the subject, the *Cape Agricultural Journal* reprints, in its January issue, Bulletin No. 123 of the Agricultural Experiment Station, California. Details are given as to cultivation, gathering the fruit, oil-making, pickling, diseases of the tree and its fruit, varieties, etc., and there are several useful explanatory illustrations.

---

In the same *Journal* appears an article by Dr. Eric. A. Nobbs, Agricultural Assistant, on recent experiments conducted with the sunflower (*Helianthus annuus*). Though it has not as yet been grown to any great extent in the Cape Colony, the writer says that, as there was good reason to anticipate that it would thrive in that Colony, seed was procured and distributed; and as a result of the trials which have been made with that seed he considers that "there can now be no reason for not extending the cultivation of sunflower on a commercial scale, as the demand exists and the proof of its cultural possibility has been established." Out of twenty-six reports received, there are only three which are not altogether satisfactory. We are told that the seed of the sunflower yields from 15 to 20 per cent. of oil, which is used for illumination, for wool-dressing, in paints, and especially for soap-making, though it is stated to be unsuitable for lubricating purposes. The cold pressed oil is of a specially good quality, and is used for a variety of culinary purposes. In view of the promising nature of the reports, full particulars are given of the nature and cultivation of the crop, in the hope that importers may be induced to stock the seed, and farmers to take up the crop on a business scale.

---

The Director of the Veterinary Laboratory at Grahamstown (Mr. W. Robertson, M.R.C.V.S.), also contributes an article on the subject of the preventative inoculation of farm stock, dealing in particular with lung-sickness, anthrax, and quarter-evil.

---

### **The Dairy.**

In the December number of the *Journal of the Board of Agriculture* (Great Britain), Professor Douglas A. Gilchrist, M.Sc., records the results of experiments made during the past summer at Offerton Hall, the

Dairy Research Station for County Durham, with the milk of newly-calved cows. The main object was to ascertain the period after calving at which the milk of newly-calved cows may be sold as normal milk. This work was done at the request of the Board of Agriculture in connection with a question arising out of a prosecution for milk adulteration, the point being whether the liquid known as colostrum could properly be sold as milk. As a result of these as well as other investigations it may fairly be assumed that the milk of newly-calved cows may be used for all ordinary purposes at the end of three complete days from calving, provided that the milk is then free from blood and is apparently normal.

---

Whether the farmer is making butter at home, or sending his cheese to a creamery, or cheese factory, the milk must be clean and carefully strained if produce of the best quality is to be made. Neglect of this straining operation results in hairs and dirt being found in the home-made butter and in the production of an inferior article at the creamery or factory. In Leaflet No. 86 the Department of Agriculture and Technical Instruction for Ireland draws attention to the following points which should be observed in order to ensure that milk shall be free from visible dirt.

---

(1) When cows are housed they should be groomed regularly. This will get rid of loose hairs and dirt which at the time of milking might fall into the milk pail. (2) In winter, when cattle are housed, the hair about the hind quarters should be clipped, so that dirt may not cling to the hair and become matted. (3) The flank and udder of the cow should be wiped with a damp cloth immediately before milking in order to remove dust and loose dirt, but they should not be brushed at this time. (4) In milking the hands of the operator should be moist but not dripping wet. To have excessive moisture on the hands, owing to a habit of dipping the fingers in the milk, or wetting them with milk from the teats during the milking operation, is a common but most objectionable practice, and is the chief cause of contamination that leads to putrefaction and decay in the milk, cream, and butter. (5) The milker should take care that no dirt falls from the cow or from his own clothing into the milk. (6) All the milk should be poured, immediately it is drawn, through a fine metal gauze strainer, or a few folds of fine muslin, or a piece of flannel. (7) If the milk has to remain in the can for some time, the can should be covered with a layer of muslin, and kept in a place where dirt cannot fall into it. (8) Neither paper, hay, nor even cloths should be placed between the lid and the neck of the can to prevent loss through spilling. "The presence of hairs or dirt in farmers' butter, or dirt in the creamery or factory strainer, is indicative of dirty and careless dairy workers."



---

**Weather Forecasting.**

A proposed new method of weather forecasting by analysis of atmospheric conditions into waves of different lengths is discussed by H. H. Clayton in the *Monthly Weather Review*. After a study of the subject the more important conclusions reached by the author are: (1) That every meteorological element at any given place may be analysed into a definite number of oscillations or waves differing in length, each of which appears to have a physical existence distinct from that of the others; (2) when analysed in the same way for any given time, the data at widely separated stations near the same latitude show analogous waves, except that the maxima and minima differ somewhat in the time of occurrence at the different stations; (3) the waves, at least in temperature latitudes, drift generally from west to east—that is, the maxima and minima occur at eastern stations later than at western stations; (4) the velocity of drift is inversely proportional to the wave length; fluctuations, or oscillations, completed in a short period of time, drift rapidly, while longer fluctuations drift more and more slowly in proportion as the time of oscillation is longer; (5) the speed of travel appears to be fairly constant from year to year for waves of the same length of oscillation measured in time.

---

The discovery of these facts not merely opens the way to a great improvement in the forecasting of weather from day to day, but also, the author considers, furnishes a scientific basis for long-range forecasting. The application of this knowledge to practical work is, however, not easy, because of the difficulty of analysing and separating the different classes of waves. As a result of working at the matter for a number of years and carefully developing and testing methods of analysis H. Charting, the author, believes it is possible to improve the present forecasts and to make forecasts longer in advance, which would be of enormous advantage to agriculture and commerce.

---

**Rind Disease of Sugar Cane.**

The rind disease of the sugar cane (due to *Melanconium sacchari*) is described by L. Lewton-Brain in Bulletin No. 7 of the Division of Pathology and Physiology, Hawaiian Sugar Planters' Association. The first symptoms of its occurrence have been noted in the leaves, which dry up prematurely and turn yellow at the tips, the drying spreading until the whole leaf is dead. The outer leaves are first affected, and the whole tip of the stalk may become dry and dead, in which case attempts may be made to develop some of the buds lower down. By the time the drying of the leaves becomes noticeable other evidences of the disease are present. At this time if the cane be split open it will be found that the normally whitish colour of the tissues is changed to a bright or dark red

or reddish brown. In the next stage the coloured areas become sunken and lose their colour, and later the internodes are sunken and more or less covered with small, black, hair-like bodies. These are the spore masses which have been put out for the dissemination of the fungus. In experiments carried out by the author he has found that the disease can be spread by rotten cane, and under field conditions the fungus probably attains access to the plant through wounds which are often caused by leaf hoppers or borers. As practical suggestions for combating the rind disease the author recommends the destruction of infected material, the prevention of wounds as far as possible, the selection and disinfection of cuttings, cultivation so as to secure as rapid growth as possible, and the use of resistant varieties.

---

### **Sugar versus Alcohol.**

According to the *Paint, Oil, and Drug Review*, Dr. Abbott, the Health Commissioner of Pennsylvania, has announced a theory—or, as he prefers to call it a “suspicion”—that the appetite for alcohol and the appetite for sugar are fundamentally the same. Chemically the two products are nearly identical, and sugar is used in making all alcohol. Physiologically, their action is somewhat similar, since alcohol in small quantities is quickly absorbed and becomes an energy producer. But it is in larger quantities that alcohol produces dire effects, while overdoses of sugar seldom do much harm. It is noted that men use more candy and less alcohol nowadays than they used to. Sugar instead of brandy is now given to men about to go into battle or a football game. Arctic explorers always take supplies of sweet chocolate with them on their expeditions.

---

*The Independent*, in commenting on this theory of consanguinity of the alcohol and the sugar habits, points out the benefits that would flow from a substitution of the harmless for the harmful habit. Instead of sending drunkards to be gold-cured, it says, we will have them sugar-cured. At any rate, sugar is the typical modern food—concentrated and quick acting. The old-time prejudices against it, that it destroyed the teeth, undermined the health of children and was an effeminate luxury, are passing away. As a substitute for alcohol its future may be yet more wonderful than its present.

---

### **Heat as a Renovator of Soil.**

T. F. Sedgwick in a bulletin of the Sugar Experiment Station of Lima, Peru, makes the suggestion that when fermentation takes place through the development of micro-organisms in the soil the ground may be renovated by heating, and states that the long continuation of good

crops in former years on the wheat fields of California may be partially accounted for by the burning of the straw and stubble on the fields, while the burning of cane trash on the fields in many sugar countries may partly explain the successful continuation of successive plantations.— (*Am. Sug. Ind. and Beet Gaz.*)

---

### **Cotton Wilt.**

The cotton disease known as wilt, blackheart or black-root, forms the subject of a bulletin by Mr. H. R. Fulton issued recently by the Agricultural Experiment Station of the Louisiana State University. The disease is caused by a fungus (*Neocosmospora vasinfecta*), which lives in the soil of infected fields and enters the cotton plant through one or more of its small roots. After gaining an entrance the minute threads of the fungus grow upward in the water carrying ducts of the plant, filling them and choking off the proper supply of water and food elements from the soil. This causes the leaves to wilt, turn yellow and drop off. The fungus also produces a discoloration of the walls of the water vessels, so that the wood of the diseased plant is seen to be dark brown when the root or stem is cut across. Experiments were undertaken in order to determine the relative value of various methods of control. As was expected, spraying the plants with fungicides gave no relief; and extensive experiments with the application of fungicides to the soil, moreover, failed to reduce appreciably the amount of wilt. The destruction of affected plants and rotation of crops were tried with some success. The removal and destruction by burning of stalks as soon as the first signs of the disease appear is recommended; and it is pointed out that, while the keeping of cotton off infected fields for even a long term of years does not completely stamp out the wilt disease, a rotation resting the land from cotton has a most beneficial effect in checking the disease. Much may evidently be effected also by judicious manuring; along this line it has been shown that the use of stable manure on wilt-infested land results in a very marked decrease in the loss from wilt, as well as in the increase in the productiveness of the stalks generally. The ploughing under of cow peas and other leguminous crops has, it is stated, a similar though less marked beneficial effect. The use of wilt-resistant varieties of cotton is also referred to; and a plan of procedure suggested to be followed for the purpose of breeding of wilt-resistant cotton is given.

---

### **The Indian Cottons.**

The Indian cottons are described by the Economic Botanist to the Government of Bombay (Prof. G. A. Gammie, F.L.S.), in the September issue of the *Memoirs of the Department of Agriculture in India*. A classified list shows that there are nine species to be found in India, one of which, we notice (*G. neglectum*), includes as many as nine varieties



and sub-varieties. After some general remarks on the cultivated cottons of India, a suggested classification is given in which the various species with their varieties and sub-varieties, are described. The descriptions are well drawn up, and are supplemented by fourteen beautifully executed plates showing various parts of the plants of the different varieties in their natural colours.

### **Rubber from a Tuber.**

In Portuguese West Africa a tuber has recently been discovered which is reported to be a source of rubber. The new plant, which is ascribed by Prof. Henriques, of Coimbra, to the natural order *Asclepiadaceae* (the *Landolphia Thollonii* and other "root rubber" species belong to the *Apocynaceae*), is known by the natives in the different localities as *ekanda* and *marianga*; and is described by the *India Rubber World* as a stemless biennial plant, with a fleshy yellow tuberous root, sometimes turnip shaped, but most frequently in form resembling a flattened sphere, the entire substance of which is permeated with lactiferous ducts. The plant ends at the top in a simple or bifurcated prolongation or pseudo stem, 2 to 4 inches in length. The leaves are dark green, in two to five pairs, forming a rosette near the earth; they are simple oval-shaped, with a small point, and slightly hairy. The feather-like veins are light green in the young leaf, but turn violet red shortly before blossoming. The blossoms are five fold, small, violet red, and mostly sterile. In form they suggest a bunch of grapes, and are enclosed in a sheath prior to opening. The fruit is a spindle-shaped bag capsule, sometimes as long as four inches, and containing up to 50 seeds. Tubers two years old are referred to as attaining a diameter of  $5\frac{1}{2}$  inches and a weight of 1 1-3rd lbs., and a rubber yield of  $\frac{1}{2}$  per cent. of the total weight resulted from crude processes. Professor Geraldès, of the Agronomical Institute at Lisbon, regards as possible a product of 188 lbs. per acre at the end of two years. But his estimate of the value of the rubber (about 5s. 4d. per lb.) is too high for the quality likely to be yielded from such a source.

### **Apiculture—A Swarming Device.**

In the *American Bee Journal* W. C. Lyman gives a description of a device tested by him in which swarming is controlled in a satisfactory manner. A brood chamber is connected with the main hive by means of a passage which opens in front near the entrance to the main hive. The bees are thus given additional room for rearing the brood and for accommodating the increasing colony without the necessity of swarming.—(*Expt. Sta. Rec.*)

## ***Gardening Notes for February.***

By W. J. BELL, Nurseryman, Florist and Seedsman, Maritzburg.

### **KITCHEN GARDEN.**

EARLY varieties of cauliflower may still be sown (excepting in the colder parts of the Colony), such as Early London and Early Erfurt.

Sow for winter crops cabbage, Brussels-sprouts, Savoy, Scotch kale, also radish, lettuce, turnip, carrot, onion, spinach, beet, etc.

The main crop of broad beans and peas should now be sown. Broad beans should be sown four inches apart and two inches deep in drills four feet apart. To secure well filled pods pinch off the tops as soon as the lower pods begin to set. A little lime or wood ash should be forked in when preparing the ground. Sow peas in drills not less than three feet apart, about 1lb. to 40 feet of drill. A rich soil well pulverised and incorporated with a fair allowance of well decayed manure should be chosen. Varieties that do well are Yorkshire Hero, Pride of the Market, Harrison's Glory, Fillbasket and Doctor McLean.

Celery may now be planted out in trenches, selecting strong young plants about six or seven inches high. The trenches should be dug out not less than two feet in depth, and should contain about twelve inches of good soil and well rotted manure in equal proportions. The ground selected should be high, where water will not drain into the trench. Some growers do not use trenches, but make the soil deep and rich and plant in rows, earthing up with the spade. When earthing up carefully close the stems and leaves to keep out the soil and promote unchecked growth by copious supplies of liquid manure.

The main crop of cauliflower should be planted out this month in rich ground, as the soil can scarcely be too rich for this crop. Plant the large varieties, such as Autumn Giant and Giant Italian not less than three feet apart and the smaller sorts two and a half feet apart. Should dry, hot weather set in immediately after planting, the young plants should be carefully shaded and regularly watered to prevent a check, which will throw them back several weeks. For the colder districts brocoli does better than cauliflower, and may be treated the same in every respect.

In warm districts free from winter frosts, tomatoes should be planted out in sheltered positions. Plants now in bearing should be kept watered in dry weather after mulching the surface round each plant with half-decayed manure.

### FLOWER GARDEN.

All seeds sown this month will require special care, shading and watering, and all watering must be done early morning and towards evening. Where frosts are not too severe in winter, the following varieties of flower seeds may be sown now for winter flowering:—Aster, Candytuft, Dianthus, *Phlox Drummondii*, Antirrhinum, Browalia, Coreopsis, Cornflower, Gaillardia, Godetia, Larkspur, Calendula, Lupin, Mignonette, Nicotiana, Pansy, Stock, and Petunia. Where the soil is poor and hard a special preparation is necessary, and some well decayed manure, leaf or vegetable mould with a little sharp sand should be forked in where the seeds are to be sown. This will form a good surface, which will not be so liable to harden with alternate rain and sun. Make the surface fine by passing some of the compost through a sieve, and, after giving a good soaking with water can, sow the seeds thinly and evenly and cover slightly with a little of the same compost also passed through the sieve, just sufficient to cover the seeds. In the case of larger seeds cover a little deeper. Afterwards cover with grass, hay or straw. This may be partly removed as soon as the seedlings appear, and then as they get stronger remove the shading altogether choosing a dull day if possible. What is required is to gradually accustom the young seedlings to the sun as they become strong enough to bear it.

Evergreens may still be planted with success during wet and cloudy weather, and it is a good time to put in all kinds of evergreen fruit trees, including oranges, naartjes, lemons, loquats, China guavas, mangoes, avocado pears, etc.

Thuja and Japan Privet fence plants will do well planted now, choosing favourable weather. These for fence purposes should be planted half a yard apart, taking care to cut away about a third at least of the wood from the top when planting. Where wind breaks are required, the sooner these are planted the better. For up-country, hardy cypresses of a spreading habit are the most suitable and effective, as they will stand frost and wind better than most things and are fairly quick in growth, and to make a variety several kinds of pines may be included. For the warmer districts the planter has a wider choice, and may include Eugénias, Lagunaries, Blackwoods, Australian willows, and gums.

---

It is estimated that the output of wheat this season in the Marico district of the Transvaal will be 80,000 bags.



## Correspondence.

### APICULTURE.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—Seeing the notes on the above by "Observer" in the November number of your journal, I take the liberty of giving you my experience of apiculture in a growing wattle district.

At present I have eight swarms hived in English W.B.C. hives which I made myself from particulars obtained from the *British Bee Keepers' Guide*, and one swarm hived in a hive purchased from a firm in Pietermaritzburg. The W.B.C. hives are by far the best for this country, as, owing to the height of roof from the frame, there is plenty of air.

I find that bees in a wattle district are useless as a money-making venture. They do not seem to make any honey from the wattle blossom. I also tried a patch of buckwheat, planting it right in front of the hives, and found out to my disgust that the bees took but very little notice of it and that it was covered from daybreak to dark with all sorts of flies. I also find that bees are very fond of gum flower, especially that of *E. robusta*, from which they garner a lot of food—being on the flowers from dawn to dark.

Regarding ants in hives, I would suggest to "Observer" that he try a piece or two of naphthaline tied up in a piece of calico placed in each hive outside of the frames between the inner and outer lining.

Should any of your readers contemplate going in for bee-keeping and desire to erect roofs or sheds for their hives, I would strongly recommend "mathoid" laid over wire netting as a strong, cheap and durable waterproof cover. It is easy to fix and everlasting.

Hoping that others will give their experiences in apiculture.—Yours, etc.,

A LOVER OF NATURE.

### A BEAN TROUBLE.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—This year all the beans which have been reaped in my immediate neighbourhood appear to have been infected by a species of blight—that is, those planted in the spring. As I am of opinion this is due to some microscopic insect, I am forwarding for your inspection a small number of beans, being a fair sample of my crop. Possibly our Entomologist might throw light on the subject.

The crops were reaped in somewhat the same condition, I under-

stand, on both banks of the River Tugela; and if we know what has been at the root of it, in future it might be possible to guard against a recurrence.—I am, etc.,

CECIL W. MARTIN.

Fort Tenedos, Zululand, 3-1-08.

[The beans sent by our correspondent are of a blistered and scalded appearance, and a number of them have growing on them a form of blue mould similar to that to be seen on boots and leather generally that have been kept in damp places; but this is, in the opinion of Mr. Fuller, to whom the beans were shown, following on some other obnoxious agent. Mr. Fuller thinks it is extremely probable that the beans have been suffering from a fungus disease known as anthracnose, which ordinarily only attacks the pod. This fungus is generally found on beans growing in damp places, and one would expect to find it fairly prevalent during the past growing season. Mr. Fuller suggests that our correspondent supply specimens of the pods from which the beans were taken. It does not matter if the pods are in a dry condition, for if the trouble is due to anthracnose there will still be indications of the disease.]

There is nothing whatever in the condition of the sample sent to indicate that the trouble has arisen from the attacks of an insect. It is, of course, possibly due to some physical disturbance resulting from excessive heat and moisture—that is to say, heat following upon moisture.]

---

“Many farmers keep no records of their work, and yet jog along all right, but we recommend a diary all the same, because apart from any utility value it is interesting to be able to turn up the records of past seasons and see how they compare with the one that is present. We strongly recommend young farmers to keep diaries, as it is a useful means of education. While one is a learner or probationer, there is someone else to organise and take the responsibility, but when the young farmer comes to have a place of his own, and has to think and act for himself, he will find no reference books more useful than the diaries he kept (if he did keep them) during the years that he occupied a position as learner. The cost of a diary is trifling, the keeping of it is merely a matter of habit, and the facts that are recorded in the book from day to day may prove to be interesting, useful, perhaps even valuable in the future.”

—*Mark Lane Express.*

## ***The Weather and Crops.***

### CONDITIONS IN DECEMBER.

IN most parts of the Colony the rainfall during December was good. Our correspondents at Ingogo, Wyford, Glenisla, Charlestown, Newcastle, and Babanango, however, report an insufficiency of rain. Our Wyford correspondent remarks: "The continued absence of rain is becoming very serious indeed in this district. Crops are either going back or quite at a standstill. Grass is becoming brown and wintry-looking;" whilst from Vryheid we hear that "the mealie crop is suffering for want of rain, and the top grub is very bad. Unless we have an exceptionally good season from now onwards, the crop will be very poor. The potato crop is also suffering for want of rain; and blight, which generally does not appear until the end of January, is already in most crops." On the other hand, at Impendhle, Himeville, Wartburg, and elsewhere the rainfall during December was excessive. In the Wartburg district, we hear, the excessive rains have interfered somewhat with planting operations this season.

From a number of districts hailstorms were reported; and the following compilation of these reports may prove instructive:—

*Ixopo (Mariathal).*—A few slight showers of hail, which was, however, nearly melted before reaching the ground. *Damage:* None. *Direction:* South to north.

*Himeville.*—One storm, on 19th December. *Damage:* Considerable to crops.

*New Hanover.*—One storm. *Damage:* "All the fruit spoilt." *Direction:* West to east.

*Muden.*—One storm. *Damage* to grapes. *Direction:* S.W. to E.N.E.

*Kranitzkop.*—One storm, lasting about ten minutes. *Damage:* Very little. *Direction:* West to east.

*Greytown.*—One storm at midnight on December 18th. *Damage:* None. *Direction:* West to east.

*Glenisla.*—A few occasional storms, causing damage in places to fruit crop. *Direction:* West to east.

*Olivier's Hoek.*—One storm, lasting about two hours. *Damage:* Considerable to mealies and fruit. *Direction:* South to north.

*Ladysmith.*—Several storms of short duration. *Damage:* Very little. *Direction:* South to north and north-east.

*Wyford.*—One storm, lasting 30 minutes. *Damage:* Considerable to fruit. *Direction:* West to east.



*Dannhauser*.—One storm, lasting 20 minutes. *Damage*: Little. *Direction*: South to north.

*Newcastle*.—Two storms. (a) Lasting ten minutes; (b) lasting 20 minutes. *Damage*: Fruit considerably damaged. *Directions*: (a) North to south; (b) north-west to south-east.

*Babanango*.—One storm, lasting about half an hour. *Damage*: Sheep killed. *Direction*: North to east.

*Nqutu*.—Two storms, lasting 10 and 20 minutes, respectively. *Damage*: Little. *Direction*: East to west.

*Melmoth*.—Four very light storms. *Damage*: None. *Direction*: (a) and (b) South to west; (c) south-west to north-east; (d) west to east.

We would like to impress upon our correspondents the desirability of as far as possible furnishing the dates on which the storms of which they furnish particulars occur. It may be possible in future years to study the recurrence of hailstorms, but in order to do that we must first collect a large amount of data, and in this direction it is within the power of our correspondents to help us considerably.

The value of the knowledge thereby gained will be fully appreciated by those who suffer from the damage caused by hailstorms.

The prospects of the mealie crop, taking the Colony as a whole, seem to be good, but unfortunately the top grub is infecting the plants in several districts. In some districts the appearance of this pest has necessitated the crop being sown over again. The potato crop, also, promises well; whilst from wattle bark we may reasonably expect—given the required meteorological conditions from now until stripping commences—very good results this season. The fruit crop is a good one, though in several districts damage has been caused by hail. From Ixopo we get the following cheering report on crop conditions generally: "I am happy to be able to report that the mealie crop and wattles—which are the chief agricultural products of this district—are in a very promising condition, and, given an average summer and autumn weather for the next few months, ought to produce good results. Our fruit trees are generally yielding well, even our vineyards, which, some time ago, seemed likely to be an utter failure, have revived considerably, and there is a prospect of a fairly abundant crop of grapes—good for the table, but not profitable in the wine press. On the whole, we enter the New Year with a fairly good outlook."

The live stock market, taking the Colony as a whole, shows little improvement. Prices of eggs and poultry, and milk and butter vary in the different districts, but there is nothing noteworthy to state relative to them.

## South African Markets.

THE prices of live stock and animal and vegetable produce, realised on the principal South African markets during the month of December-January, averaged as follows:—

### NATAL.

#### PIETERMARITZBURG.

The Market Master has furnished the following prices realised on the Maritzburg market during the month:—

*Live Stock.*—Fowls, 2s; ducks, 2s 6d; turkeys: cocks, 16s, hens, 8s 6d; guinea-fowls, 3s 3d; rabbits, 1s 3d.

*Animal Produce.*—Bacon, 6d per lb; ham, 9d per lb; lard, 9d per lb; pork, 5d per lb; eggs, 1s 9d per doz; butter: fresh, 1s, salt, 9d per lb; cheese, 9d per lb; hides, 3 $\frac{3}{4}$ d per lb; honey, 6d per lb.

*Vegetable Produce.*—Barley, 10s per 100 lbs; beans, 10s per 100 lbs; earth nuts, 10s per muid; hay, 35s per ton; amabele, 5s 6d per 100 lbs; lucerne, £3 per ton; mealies, 4s 9d per 100 lbs; millet (Japanese), 4s per 100 lbs; onions, 16s per 100 lbs; peas, 8s per 100 lbs; potatoes, 3s 6d per 100 lbs; sunflower seeds, 8s per 100 lbs; sweet potatoes, 2s 6d per muid; wheat, 16s per 100 lbs; apples, 2s 6d per 100; pears, 4s per 100; bananas, 1s 6d per 100; oranges, 3s per 100; naartjes, 3s 6d per 100; lemons, 2s per 100; peaches, 2s 6d per 100; pineapples, 1s 6d per doz; papaws, 1s 6d per doz; mangoes, 2s 6d per 100.

### DURBAN.

The Market Master reports the following average prices realised during the month ended 15th January:—

*Live Stock and Animal Produce.*—Sucking pigs, 5s; fowls, 1s 7d; ducks, 2s 7d; turkeys, 12s 6d; guinea fowls, 3s 3d; rabbits, 1s 4d; bacon, 4d per lb; ham, 8d per lb; eggs, new laid, 2s per doz; honey, 6d per lb; butter, 1s 2d per lb.

*Vegetable Produce.*—Earth nuts, 14s 6d per muid; mealies, 9s 6d per muid; bananas, 10d per 100.

### CAPE COLONY.

The following information has been compiled from the last available report of the Commercial Agent of the Cape Department of Agriculture (for the week ended 11th January):—

## LIVE STOCK, ETC.

There is a demand for good slaughter oxen and sheep. Little is being done at present in pork. Oxen, 30s to 40s per 100 lbs, dressed weight, Maitland; sheep, 18s to 18s 6d per head, average weight, 48 lbs to 50 lbs; fowls, 1s to 1s 4d, medium 1s 4d to 1s 11d, large 2s to 2s 9d; ducks, 1s 11d to 3s 2d; turkeys: hens 4s to 6s 6d, cocks 5s to 8s; geese, 2s 5d to 3s 6d.

Butter, best Colonial: 1s 6d wholesale, 1s 9d retail; cheese, Colonial Cheddar, 9d to 10½d per lb, delivered in Cape Town; eggs: fresh 12s to 12s 6d per 100, not guaranteed 9s to 11s per 100 (in demand).

## VEGETABLE PRODUCE.

*Barley*.—Buyers for good white barley are offering 8s to 8s 6d delivered Cape Town; the demand, however, is small at present.

*Colonial Rye*.—Sales have been effected at 14s 9d to 15s delivered buyer's store, Cape Town, during the past week and it is not anticipated that these prices will weaken.

*Kafir Corn*.—The East London market is again firmer owing to the scarcity of this article and any change should be in an upward direction until the arrival of the new season's crops. To-day East London firms are quoting 16s to 16s 3d c.i.f. Local sellers are asking 16s 9d to 17s delivered buyer's store.

*Bran*.—The market is slightly firmer, 5s to 5s 3d delivered buyer's store is being asked.

*Lucerne*.—The prices for lucerne have weakened owing to the exceptionally low quotations now ruling for oathay.

*Oathay*.—It is fully believed that the present price of oathay is actually the bedrock quotation and a slight advance may therefore be anticipated in the near future.

*Grains, Cereals, etc., Local Prices.*

(Quotations are for bags included.)

Colonial wheat, per 200 lbs.—Caledon 1st, 19s 9d to 20s; Malmesbury, 19s 9d to 20s; Moorreesburg, 19s 9d to 20s; Porterville Road, 20s 6d to 21s.

Colonial Oats, per 150 lbs.—Caledon, 1st, 6s 2d to 6s 3d; Moorreesburg, 6s 3d to 6s 6d; Malmesbury, 6s 6d; Main line, 6s 9d.

Colonial Barley, per 150 lbs.—Moorreesburg, 7s 9d to 8s; Main line, 8s to 8s 6d; Caledon, 7s to 7s 6d.

Mealies, per 200 lbs.—*Ex stores*, Cape Town: Natal yellows, 13s 6d to 13s 9d; O.R.C. small yellows, 13s 9d to 14s; Natal white coast, 13s 6d to 13s 9d.

Forage, per 100 lbs.—Colonial lucerne hay, 4s 3d to 4s 6d, *ex stores*, Cape Town; Colonial oathay, 2s 9d to 2s 10d, Main line stations, 2s 7d to 2s 8d, Moorreesburg and Malmesbury; Colonial fodder, 4s 6d to 4s 9d, *ex stores*, Cape Town; Colonial compressed chaff, 1s 7d to 1s 8d, Main line stations; 1s 6d to 1s 7d, Moorreesburg and Malmesbury.



VEGETABLES AND FRUIT.

Beans, 30s to 37s 6d per bag of 180 lbs; potatoes: 1st quality 7s to 10s per bag of 150 lbs, 2nd quality 3s to 6s per bag; sweet potatoes, 4s per bag; onions: 1st quality 7s to 8s 6d per bag, 2nd 4s to 6s per bag; green peas (fresh), 5s to 8s per bag.

Apricots, 1s 6d to 2s 6d per 100, dried 4d to 5d per lb; plums: small 6d per 100, medium 10d to 1s 6d per 100, large 1s 6d to 3s per 100; pears: Jargenelle 9s per box of about 50 lbs, French William 4s to 12s per 100; peaches: small 1s 9d to 2s 3d per 100, medium 2s to 4s per 100, large 5s to 8s 6d per 100; limes, 1s to 4s 6d per 100; bananas, 14s to 21s per case, choicest 22s to 28s per case of 800 to 1,000; pineapples 1s 6d to 4s 6d per dozen.

CAPE TOWN.

Mr. M. Levitan, general merchant and produce agent, 62, 64, and 66, Buitengracht Street, Cape Town, reports the following prices for the week ended 22nd January:—

*Live Stock and Animal Produce.*—Fowls: picked 2s 2d to 2s 9d, mixed 1s 3d to 2s; ducks, 1s 6d to 2s 9d; turkeys: cocks 7s to 9s 6d, hens 4s to 6s; pigeons, 7d to 9d; eggs: large, guaranteed fresh, per hundred, 10s to 10s 6d, not guaranteed 9s to 9s 6d; butter: A1 fresh 1s 2d to 1s 4d, 2nd fresh 11d to 1s.

*Vegetable Produce.*—Mealies, per bag 200 lbs: Natal yellow 13s 6d to 13s 9d, O.R.C. 13s 9d to 14s; barley, 7s to 8s 6d per bag 150 lbs; bran, 6s per bag 100 lbs; oats, Boer, 6s 2d to 6s 10d per bag 150 lbs; wheat, 20s to 21s per bag 200 lbs; forage: best 2s 9d to 2s 10d, other 2s 7d to 2s 8d per 100 lbs; chaff, best, compressed, 1s 7d to 1s 8d per 100 lbs; beans, per 180 lbs: sugar 40s to 41s 6d, Natal 39s to 40s, white 21s to 22s 6d, Governor 40s to 42s, Van Zeal 29s to 30s, red 20s to 22s 6d; dry peas, 18s to 20s per 200 lbs; potatoes: best new 7s 6d to 8s, other and small 4s to 6s, per bag 150 lbs; onions, best, 5s 6d to 6s 6d per bag 120 lbs; sweet potatoes, 6s per bag; pineapples, best, 2s to 3s per dozen; pears, 2s to 7s per 100.

ORANGE RIVER COLONY.

BLOEMFONTEIN.

According to the Bloemfontein *Weekly Post*, the following prices were realised on the Bloemfontein market on Saturday, 18th January:—

*Live Stock and Animal Produce.*—Fowls, 1s 3d to 1s 6d; turkeys, 4s to 7s 6d; dressed fowls, 1s 6d to 2s; mutton, 4s 6d to 5s per hind quarter, 2s 6d to 3s 6d per fore quarter; pork, 6d to 7d per lb; beef, 6d to 7d per lb; butter, 9d to 1s per lb; fresh eggs, 1s 3d to 1s 4d per dozen.

*Vegetable Produce.*—Oat hay, 2s 9d to 4s per 100 lbs; chaff, 3s 6d to 4s 6d per bale; kafir corn, 12s 6d to 13s per bag; mealies, 8s to 9s 6d per bag; barley (grain), 6s per bag; bran, 6s 6d to 7s per bag; seed oats, 10s to 11s 6d per bag; onions, 5s to 10s per bag; potatoes, 4s to 10s per bag; oranges, 5s to 6s 6d per 100; apples, 1s to 1s 6d per 100; lemons, 3s to 5s; pineapples, 2s to 2s 6d per dozen.

---

## TRANSVAAL.

---

### JOHANNESBURG.

Mr. Alfred Webb, produce agent, P.O. Box 2342, Johannesburg, representing the farmers' co-operative associations of the Cape Colony, has furnished the following prices realised on the Johannesburg market during the week ended 23rd January:—

*Live Stock.*—Boer goats, 12s 6d to 20s; donkeys, £6 to £7 5s; oxen: slaughter £8 to £17, dressed £1 12s 6d to £1 16s per 100 lbs; pigs, 3d to 4d per lb, live weight; sheep: slaughter lambs 13s to 21s, dressed 4½d to 5d per lb; ducks, 1s 6d to 2s 6d; fowls, 1s 6d to 2s 9d; turkeys: cocks 7s 6d to 10s, hens 3s 6d to 5s.

Prices of live stock have steadily declined all round owing to over supply. Farmers should obtain reliable advice at all times before despatching consignments.

*Animal Produce.*—Butter, 7d to 1s 2d per lb; eggs: new laid 1s 9d to 3s, fresh 1s 3d to 1s 6d.

*Vegetable Produce.*—Bran, 5s 6d to 7s per 100 lbs net; barley, 6s to 7s 6d per 150 lbs net; beans, dry, 12s 6d to 18s per 200 lbs net; forage, 2s 6d to 5s per 100 lbs; kafir corn, 13s per 200 lbs net; lucerne, dry, 2s to 4s per 100 lbs; manna, 3s 3d per 100 lbs; mealies: white 8s 3d, yellow 7s 6d to 8s 6d, per 200 lbs net; onions, 4s to 8s per 120 lbs; oats (seed), 7s 6d to 10s per 150 lbs net; potatoes: best 5s to 10s, medium 2s to 4s, per 150 lbs net; wheat, 17s 6d to 20s per 200 lbs net; bananas, 1s 6d to 2s per 100; mangoes, 2s to 3s per 100; pineapples, 1s to 2s per dozen.

Pines are in good demand at the moment, but there is little demand for bananas and mangoes. Papaws can be sent forward, also plums, pears, peaches, apples, etc. The market is fairly well supplied with vegetables.

---

## WOOL, MOHAIR, ETC.

---

Messrs. W. Dunn & Co., Durban, in the course of their report on wool, mohair, etc., write:—

### WOOL.

The market of late has been most erratic, last week's market being firm, but this week's was slightly weaker, and is no doubt due to cables

received stating that Antwerp Sales opened 8 per cent. lower. Buyers here are now holding on until result of London Sales, which open on the 21st inst. Buyers here anticipate a drop of 5 to  $7\frac{1}{2}$  per cent. This week the market was well supplied, but the bulk being declared not sold, though since the sales a good deal sold privately, in some cases a slight advance being made on light parcels. We quote:—

*Senekal and Winburg District.*

Long clean mount clips, 7d to  $7\frac{1}{4}$ d; long clean, 12 months,  $6\frac{1}{4}$ d to 7d; earthy heavy ditto,  $5\frac{1}{2}$ d to 6d; spec. good sorted clips,  $6\frac{1}{2}$ d to 7d; short, 6 months, 6d to  $6\frac{1}{2}$ d.

*Bethlehem, Reitz, Lindley, Heilbron, Kroonstad.*

Long light, 12 months, 7d to  $7\frac{1}{4}$ d; earthy heavy ditto,  $5\frac{1}{2}$ d to 6d; clean light, 6-9 months,  $6\frac{1}{4}$ d to 7d; earthy heavy ditto,  $5\frac{1}{4}$ d to  $5\frac{1}{2}$ d; med. light, 12 months,  $6\frac{3}{4}$ d to 7d.

*Transvaal and West O.R.C.*

Good long light, 12 months, 7d to  $7\frac{1}{4}$ d; average ditto,  $6\frac{1}{2}$ d to  $7\frac{1}{2}$ d; heavy inf. ditto,  $5\frac{1}{2}$ d to  $6\frac{1}{4}$ d; sup. short clean,  $6\frac{1}{2}$ d to  $7\frac{1}{2}$ d; earthy heavy ditto, 5d to  $5\frac{1}{2}$ d.

*Harrismith and Vrede District.*

Good light, 12 months, 7d to  $7\frac{1}{4}$ d; average length ditto,  $6\frac{1}{2}$ d to 7d; short clean, 6-9 months,  $6\frac{1}{2}$ d to 7d; heavy infer., 2 months, 6d to  $6\frac{1}{2}$ d; earthy heavy,  $5\frac{1}{2}$ d to  $5\frac{3}{4}$ d; average fair ditto, 6d to  $6\frac{1}{4}$ d.

NATIVE WOOLS.

Basutoland, 6d to  $6\frac{1}{4}$ d; East Griqualand,  $7\frac{1}{2}$ d to 8d.

MOHAIR.

On the public sales this week there were 90 bales offered (principally native hair) of which 17 bales were declared sold at prices ranging from 9d to 10 $\frac{5}{8}$ d. There have been 100 bales of Natal and O.R.C. Mixed Wool sold privately at 10d to 10 $\frac{3}{4}$ d. At present the stock in town consists of about 80 bales, chiefly Griqualand Hair.

We quote:— Super. long sorted O.R.C. and Transvaal, 12 $\frac{1}{2}$ d to 13d; mixed, 10d to 10 $\frac{3}{4}$ d; Native mixed, 9d to 10d; coloured and kempy, 7d to  $7\frac{1}{2}$ d.

HIDES AND SKINS.

*Hides.*—Super. sundried, 5d to  $5\frac{1}{4}$ d; damaged, 4d to  $4\frac{1}{2}$ d; salted,  $3\frac{3}{4}$ d to 4d.

*Sheep Skins.*—Sound skins are quoted at  $4\frac{3}{4}$ d to 5d; damaged,  $2\frac{1}{2}$ d; average,  $3\frac{1}{2}$ d to 4d; mixed parcels,  $3\frac{1}{4}$ d.

*Goat Skins.*—Sound skins, 3d to  $3\frac{1}{4}$ d; average,  $2\frac{1}{2}$ d.

*Angora Skins.*—Sound,  $2\frac{3}{4}$ d to 3d; damaged, 1d.



## **The Oversea Maize Market.**

### THE POSITION IN DECEMBER.

THROUGHOUT December the maize market remained dull and prices generally declined. According to *Beerbohm's Evening Corn Trade List* of the 29th November, the market has been suffering from lack of demand, both in Great Britain and on the Continent. For some time supplies in the United Kingdom were more than ample, and "consumers are digesting these big supplies, and waiting for the effect of the new American crop." On the Continent the slackness of demand has been even more striking, except, perhaps, in Germany. For the next two or three months much will depend, apart from the depressing influence of dear money, upon the American shipments. This will be seen from the following statement of weekly average shipments, in the past three seasons, from December 15th to March 15th:—

#### WEEKLY AVERAGE SHIPMENTS TO EUROPE.

*December 15 to March 15.*

| <i>From—</i>      | 1906-7<br>Qrs. | 1905-6<br>Qrs. | 1904-5<br>Qrs. |
|-------------------|----------------|----------------|----------------|
| U.S.A. . . . .    | 235,000        | 500,000        | 370,000        |
| Argentina . . . . | 75,000         | 50,000         | 115,000        |
| Elsewhere . . . . | 115,000        | 25,000         | 30,000         |
|                   | 425,000        | 575,000        | 515,000        |

It may be regarded as quite probable, the *Corn Trade List* thinks, that during January, February, and March the shipments, apart from those from America, may not exceed 100,000 quarters per week: what America will do remains to be seen, in view of the relatively small crop which has been reaped, and concerning which reports do not improve as husking progresses. The *Chicago Economist* of November 30th, however, says: There is the most powerful "bear" party in maize that has been seen in recent years, and the market is heavily oversold. Provision interests and their followers are short, and the country and a few local speculators are long. The "bears" figure that maize is commercially too high, that farmers will not feed 50c. maize to 4c. hogs. Farmers are not selling freely, as much of the crop is too green to shell and money is too scarce for interior dealers to operate.

As with wheat, so also with maize, will the very unsatisfactory

financial conditions in America doubtless exert a depressing influence for some time to come.

The *Corn Trade List* publishes the following statement giving estimates of the world's maize crop for 1907, compared with final returns for the previous five years, based mainly upon official reports:—

THE WORLD'S MAIZE CROP.

(ooo's omitted).

|                             | 1907.   | 1906.   | 1905.   | 1904.   | 1903.   | 1902.   |
|-----------------------------|---------|---------|---------|---------|---------|---------|
|                             | Qrs.    | Qrs.    | Qrs.    | Qrs.    | Qrs.    | Qrs.    |
| America ...                 | 295,000 | 335,000 | 315,000 | 285,000 | 261,000 | 296,000 |
| Canada ...                  | 2,500   | 2,800   | 2,500   | 2,450   | 3,500   | 2,500   |
| Mexico ...                  | 10,000  | 9,000   | 9,000   | 10,250  | 10,600  | 9,100   |
| Argentina ...               | 11,500  | 19,500  | 16,500  | 18,500  | 17,000  | 10,000  |
| Uruguay ...                 | 750     | 500     | 550     | 350     | 650     | 650     |
| France ...                  | 2,500   | 2,000   | 2,500   | 2,300   | 3,000   | 2,900   |
| Spain ...                   | 2,500   | 2,100   | 2,000   | 2,500   | 2,250   | 3,000   |
| Portugal ...                | 1,000   | 1,250   | 1,000   | 700     | 500     | 1,000   |
| Italy ...                   | 10,000  | 10,500  | 9,150   | 9,500   | 10,700  | 8,650   |
| Austria ...                 | 2,000   | 2,000   | 1,600   | 1,500   | 1,500   | 1,950   |
| Hungary ...                 | 20,000  | 19,000  | 15,500  | 8,400   | 19,500  | 14,600  |
| Roumania ...                | 8,000   | 16,000  | 7,500   | 2,400   | 9,750   | 8,275   |
| Bulgaria and<br>Roumelia... | 2,500   | 4,500   | 2,750   | 2,000   | 4,000   | 3,500   |
| Servia ...                  | 2,000   | 2,750   | 2,500   | 1,500   | 2,000   | 2,150   |
| Russia ...                  | 6,000   | 8,500   | 3,900   | 3,000   | 4,600   | 4,500   |
| Turkey ...                  | 4,000   | 6,500   | 4,500   | 4,000   | 4,000   | 6,000   |
| Egypt ...                   | 2,500   | 3,000   | 3,550   | 2,500   | 2,500   | 2,000   |
| Total ...                   | 382,750 | 444,900 | 400,000 | 356,850 | 357,350 | 376,775 |

The exports for the season ended October 31st compare as follows with the total crops since 1900:—

|             | Crop        | Exports    |
|-------------|-------------|------------|
|             | Qrs.        | Qrs.       |
| 1906/07 ... | 444,900,000 | 26,500,000 |
| 1905/06 ... | 400,000,000 | 25,250,000 |
| 1904/05 ... | 356,800,000 | 24,575,000 |
| 1903/04 ... | 357,250,000 | 21,165,000 |
| 1902/03 ... | 376,775,000 | 23,900,000 |
| 1901/02 ... | 272,550,000 | 20,200,000 |

The general statistical position of maize on the 27th December was as follows:—

|                                                |     | 1907—qrs.   | 1906—qrs.   | 1905—qrs.   |
|------------------------------------------------|-----|-------------|-------------|-------------|
| On passage to U.K.                             | ... | 375,000     | 825,000     | 675,000     |
| , „ Cont.                                      | ... | 625,000     | 1,365,000   | 1,025,000   |
| Imports into U.K. for the 51 weeks ending      |     |             |             |             |
| Dec. 21                                        | ... | 12,176,700  | 10,862,200  | 9,718,000   |
| Visible supply in U.S. ( <i>Bradstreet's</i> ) | ... | 682,600     | 896,000     | 1,926,500   |
|                                                |     | 1906-7      | 1905-6      | 1904-5      |
| American crop                                  | ... | 340,000,000 | 316,000,000 | 285,000,000 |
|                                                |     | 1907.       | 1906.       | 1905        |
| New York, Spot (new crop)                      | ... | 66½c        | 51¼c        | 50¾c        |
| Mark Lane, La Plata landed                     | ... | 25/6        | 20/9        | 24/6        |

#### SHIPMENTS OF MAIZE TO EUROPE FROM JANUARY 1ST TO DATE.

|               | 1907.<br>U.K.* | 1907.<br>Cont. | 1906.<br>U.K.* | 1906.<br>Cont. | 1905.<br>U.K.* | 1905.<br>Cont. |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
|               | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           |
| America ...   | 3,969,000      | 4,244,000      | 4,173,000      | 6,330,000      | 5,117,000      | 6,261,000      |
| Argentina ... | 3,804,000      | 2,101,000      | 6,152,000      | 5,613,000      | 6,427,000      | 3,831,000      |
| Russia ...    | 1,530,000      | 2,208,000      | 214,000        | 380,000        | 223,000        | 586,000        |
| Danube, etc.  | 2,707,000      | 4,317,000      | 581,000        | 1,577,000      | 158,000        | 222,000        |
| Total ...     | 12,010,000     | 12,870,000     | 11,120,000     | 13,900,000     | 11,925,000     | 10,900,000     |

\* Includes shipments for orders.

It is stated that a single ear of maize won for its grower £1,507 in prizes at the National Corn Exhibition at Chicago, it being adjudged to be the best and most perfect in a competition open to the world. The ear was of the Boone County, white variety, and, including the cob, weighed 23 oz. and contained 1,251 grain seeds, all of good proportions. Rather than let such a production get into other hands, the exhibitor himself paid £50 for it at the auction sale, this price being a world's record.



## Coal and Labour Return.

Return of Coal raised and Labour employed at the Natal Collieries for the month of December, 1907:—

| Name of Colliery.        | Average Labour Employed. |     |       |               |       |       |                     |     |     | Output. |      |
|--------------------------|--------------------------|-----|-------|---------------|-------|-------|---------------------|-----|-----|---------|------|
|                          | Above Ground.            |     |       | Below Ground. |       |       | Unproductive Work.* |     |     | Tons.   | Cwt. |
|                          | E.                       | N.  | I.    | E.            | N.    | I.    | E.                  | N.  | I.  |         |      |
| Natal Navigation ..      | 36                       | 92  | 289   | 24            | 317   | 264   | 4                   | 12  | 2   | 29,015  | 0    |
| Elandslaagte ..          | 21                       | 26  | 321   | 22            | 273   | 568   | 3                   | 2   | 6   | 19,561  | 15   |
| Glencoe, Natal ..        | 13                       | 119 | 69    | 11            | 483   | 29    | —                   | —   | —   | 17,082  | 1    |
| Dundee Coal Co. ..       | 23                       | 13  | 207   | 18            | 75    | 362   | 2                   | —   | 20  | 16,723  | 6    |
| Durban Navigation ..     | 26                       | 156 | 60    | 11            | 374   | 73    | —                   | —   | —   | 15,215  | 0    |
| St. George's ..          | 19                       | 79  | 118   | 13            | 281   | 146   | —                   | —   | —   | 13,147  | 0    |
| Natal Cambrian ..        | 14                       | 42  | 190   | 12            | 320   | 98    | 4                   | 3   | 1   | 13,627  | 8    |
| South African ..         | 10                       | 17  | 141   | 13            | 229   | 36    | 6                   | 28  | 24  | 12,284  | 14   |
| Newcastle ..             | 10                       | 44  | 27    | 8             | 321   | 2     | 3                   | 12  | —   | 7,009   | 4    |
| Ta'ana† ..               | 13                       | 49  | 46    | 8             | 107   | 160   | —                   | —   | —   | 4,562   | 9    |
| Ramsay ..                | 4                        | 12  | 50    | 4             | 110   | 119   | 2                   | 10  | 10  | 3,961   | 14   |
| Natal Steam Coal Co. ..  | 3                        | 56  | 6     | 2             | 176   | 2     | —                   | 14  | 4   | 3,437   | 14   |
| West Lennoxton ..        | 5                        | 2   | 64    | 2             | 25    | 105   | —                   | —   | —   | 2,631   | 13   |
| Central ..               | 6                        | 41  | 9     | 5             | 123   | 9     | —                   | —   | —   | 1,572   | 7    |
| Zululand ..              | 4                        | 37  | —     | 7             | 75    | —     | —                   | —   | —   | 1,078   | 0    |
| Ballengeich ..           | 3                        | 22  | 11    | 3             | 33    | 4     | 5                   | 25  | 6   | 357     | 17   |
| Nooitgedacht ..          | —                        | 2   | —     | 1             | 2     | —     | —                   | —   | —   | 14      | 0    |
| Dumbi Mountain ..        | 1                        | 1   | —     | —             | —     | —     | —                   | —   | —   | 3       | 10   |
| Totals .. ..             | 211                      | 810 | 1,608 | 164           | 3,324 | 1,977 | 29                  | 106 | 73  | 160,684 | 12   |
| Corresponding month, '06 | 157                      | 647 | 1,300 | 121           | 2,463 | 1,455 | 49                  | 135 | 301 | 104,571 | 11   |

\* Cost charged to Capital Account.

† Includes November Return.

NOTE.—The total output during the year 1907 was 1,530,035 tons. During the year 1906 it was 1,233,713 tons.

Maritzburg,  
9th January, 1908.

CHAS. J. GRAY,  
Commissioner of Mines.

Return of Coal bunkered and exported from the Port of Durban for the month of December, 1907:—

|                     | Tons.          | Cwt      |
|---------------------|----------------|----------|
| *Bunker Coal ... .. | 65,451         | 8        |
| Exported to:—       |                |          |
| East London ... ..  | 1,545          | 3        |
| Algoa Bay ... ..    | 2,924          | 12       |
| Cape Town ... ..    | 21,031         | 12       |
| Lobito Bay ... ..   | 412            | 5        |
| Beira ... ..        | 58             | 11       |
| Bombay ... ..       | 7,958          | 0        |
| Singapore ... ..    | 9,537          | 9        |
| <b>Total ... ..</b> | <b>108,919</b> | <b>0</b> |

\* Includes 3,482 tons 13 cwt. taken by H.M. Transports.

Custom House, Port Natal,  
3rd January, 1908.

GEO. MAYSTON,  
Collector of Customs.

**Manures on the Natal Market, Season 1907.**

| NAME OF MANURE.             | NITROGEN. |                             | PHOSPHORIC ACID. |                             |                  |                             |                    |                             |         |          | POTASH.   |                             | Estimated Total Value of Manure per Ton (2,000 lbs.) f.o.r. Durban. | Price asked per Ton of 2,000 lbs. f.o.r. Durban. |
|-----------------------------|-----------|-----------------------------|------------------|-----------------------------|------------------|-----------------------------|--------------------|-----------------------------|---------|----------|-----------|-----------------------------|---------------------------------------------------------------------|--------------------------------------------------|
|                             | Per Cent. | Value in One Ton of Manure. | Water Soluble.   |                             | Citrate Soluble. |                             | Citrate Insoluble. |                             | TOTAL.  |          | Per Cent. | Value in One Ton of Manure. |                                                                     |                                                  |
|                             |           |                             | Per Cent.        | Value in One Ton of Manure. | Per Cent.        | Value in One Ton of Manure. | Per Cent.          | Value in One Ton of Manure. |         |          |           |                             |                                                                     |                                                  |
|                             |           |                             |                  |                             |                  |                             |                    |                             |         |          |           |                             |                                                                     |                                                  |
| <i>Nitrogenous:</i>         | £ s. d.   | £ s. d.                     | £ s. d.          | £ s. d.                     | £ s. d.          | £ s. d.                     | £ s. d.            | £ s. d.                     | £ s. d. | £ s. d.  | £ s. d.   | £ s. d.                     | £ s. d.                                                             |                                                  |
| Sulphate of Ammonia         | 20 73     | 16 4 9                      | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | ...       | ...                         | 16 4 9                                                              | 16 12 6a                                         |
| do.                         | 20 35     | 15 18 10                    | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | ...       | ...                         | 15 18 10                                                            | 15 10 0b                                         |
| Nitrate of Soda             | 16 06     | 12 12 11                    | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | ...       | ...                         | 12 12 11                                                            | 12 15 0a                                         |
| do.                         | 16 02     | 12 12 4                     | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | ...       | ...                         | 12 12 4                                                             | 12 10 0b                                         |
| do.                         | 15 51     | 12 4 3                      | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | ...       | ...                         | 12 4 3                                                              | 12 4 6c                                          |
| Nitrate of Potash           | 13 58     | 10 13 11                    | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | 41 47     | 11 19 0                     | 22 12 11                                                            | 21 0 0b                                          |
| "Nitrate" of Lime           | 17 35     | 13 13 3                     | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | ...       | ...                         | 13 13 3                                                             | 15 10 0b                                         |
| Dried Blood                 | 13 00     | 9 15 0                      | ...              | ...                         | ...              | ...                         | ...                | ...                         | ...     | ...      | ...       | ...                         | 9 15 0                                                              | 14 15 0a                                         |
| <i>Mainly Phosphatic:</i>   |           |                             |                  |                             |                  |                             |                    |                             |         |          |           |                             |                                                                     |                                                  |
| Superphosphate (Double)     | ...       | ...                         | 41 02            | 12 5 9                      | 2 14             | 0 8 11                      | 0 10               | 0 0 3                       | 46 26   | 12 14 11 | ...       | ...                         | 12 14 11                                                            | 11 10 0b                                         |
| do.                         | ...       | ...                         | 41 88            | 11 15 6                     | 2 02             | 0 8 5                       | 0 20               | 0 0 7                       | 44 10   | 12 4 6   | ...       | ...                         | 12 4 6                                                              | 12 2 6a                                          |
| do.                         | ...       | ...                         | 39 76            | 11 2 0                      | 2 82             | 0 11 9                      | 0 34               | 0 0 11                      | 42 92   | 11 14 8  | ...       | ...                         | 11 14 8                                                             | 12 0 6d                                          |
| Superphosphate (High Grade) | ...       | ...                         | 17 50            | 4 17 9                      | 1 52             | 0 6 4                       | 0 22               | 0 0 7                       | 19 24   | 5 4 8    | ...       | ...                         | 5 4 8                                                               | 5 4 6e                                           |
| do.                         | ...       | ...                         | 17 35            | 4 16 10                     | 1 01             | 0 4 3                       | 0 10               | 0 0 3                       | 18 46   | 5 1 4    | ...       | ...                         | 5 1 4                                                               | 5 5 0b                                           |
| do.                         | ...       | ...                         | 16 68            | 4 13 2                      | 1 16             | 0 4 10                      | 0 19               | 0 0 6                       | 18 03   | 4 18 6   | ...       | ...                         | 4 18 6                                                              | 5 9 6a                                           |
| do.                         | ...       | ...                         | 16 46            | 4 11 11                     | 1 25             | 0 5 3                       | 0 45               | 0 1 3                       | 18 16   | 4 18 5   | ...       | ...                         | 4 18 5                                                              | 5 4 6e                                           |
| do.                         | ...       | ...                         | 16 01            | 4 9 5                       | 1 23             | 0 5 2                       | 0 51               | 0 1 5                       | 17 75   | 4 16 0   | ...       | ...                         | 4 16 0                                                              | 4 17 6f                                          |

|                              |       |          |       |        |       |         |       |        |       |         |     |     |         |         |
|------------------------------|-------|----------|-------|--------|-------|---------|-------|--------|-------|---------|-----|-----|---------|---------|
| Superphosphate<br>(Ordinary) | ...   | ...      | 13'74 | 3 16 9 | 2'05  | 0 8 7   | 0'96  | 0 2 8  | 16'75 | 4 8 0   | ... | ... | 4 8 0   | 4 8 0g  |
| do.                          | ...   | ...      | 14'98 | 4 3 8  | 0'62  | 0 2 7   | 0'36  | 0 1 0  | 15'96 | 4 7 3   | ... | ... | 4 7 3   | 4 10 3e |
| do.                          | ...   | ...      | 12'28 | 3 8 7  | 1'22  | 0 5 1   | 0'62  | 0 1 8  | 14'12 | 3 15 4  | ... | ... | 3 15 4  | 4 13 6a |
| Dissolved Bone<br>Compound   | 1'84  | 1 5 8    | 12'85 | 3 11 9 | 1'93  | 0 8 1   | 1'30  | 0 3 7  | 16'08 | 4 3 5   | ... | ... | 5 9 1   | 5 18 6a |
| do.                          | 1'92  | 0 13 4   | 9'91  | 2 15 4 | 1'25  | 0 5 3   | 2'52  | 0 6 11 | 13'68 | 4 3 5   | ... | ... | 4 0 10  | 6 3 6e  |
| Bone, Steamed                | 1'37  | 0 16 1   | ...   | ...    | 9'05  | 1 17 9  | 23'83 | 3 5 6  | 32'88 | 5 3 3   | ... | ... | 5 19 4  | 6 0 ob  |
| do.                          | 1'27  | 0 14 11  | ...   | ...    | 7'37  | 1 10 9  | 24'97 | 3 8 8  | 32'34 | 4 19 5  | ... | ... | 5 14 4  | 5 14 oe |
| Bone, Ground...              | 4'71  | 2 15 4   | ...   | ...    | 8'00  | 1 13 4  | 16'21 | 2 4 7  | 24'21 | 3 17 11 | ... | ... | 6 13 3  | 5 18 6a |
| do.                          | 4'27  | 2 10 2   | ...   | ...    | 9'15  | 1 18 2  | 15'19 | 2 1 9  | 24'34 | 3 19 11 | ... | ... | 6 10 1  | 5 17 6f |
| do.                          | 4'05  | 2 7 7    | ...   | ...    | 4'15  | 0 17 4  | 20'41 | 2 16 1 | 24'56 | 3 13 5  | ... | ... | 6 1 0   | 6 0 ob  |
| do.                          | 3'99  | 2 6 11   | ...   | ...    | 5'64  | 1 3 6   | 17'97 | 2 9 5  | 23'61 | 3 12 11 | ... | ... | 5 19 10 | 6 4 2h  |
| do.                          | 3'02  | 1 15 6   | ...   | ...    | 3'45  | 0 14 5  | 16'37 | 2 5 0  | 19'82 | 2 19 5  | ... | ... | 4 14 11 | 6 4 2i  |
| Basic Slag                   | ...   | ...      | ...   | ...    | 10'56 | 2 12 10 | 11'56 | 2 0 6  | 22'12 | 4 13 4  | ... | ... | 4 13 4  | 4 10 ob |
| do.                          | ...   | ...      | ...   | ...    | 10'68 | 2 13 5  | 8'66  | 1 10 4 | 19'34 | 4 3 9   | ... | ... | 4 3 9   | 4 2 6a  |
| do.                          | ...   | ...      | ...   | ...    | 8'65  | 2 3 3   | 9'31  | 1 13 5 | 17'96 | 3 16 8  | ... | ... | 3 16 8  | 3 19 6c |
| Potassic :                   |       |          |       |        |       |         |       |        |       |         |     |     |         |         |
| Muriate of Pot-              | ...   | ...      | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| ash                          | ...   | ...      | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| Sulphate of Pot-             | ...   | ...      | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| ash                          | ...   | ...      | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| Nitrate of Pot-              | ...   | ...      | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| ash                          | ...   | ...      | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| Kanit                        | 13'58 | 10 13 11 | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| Complete :                   | ...   | ...      | ...   | ...    | ...   | ...     | ...   | ...    | ...   | ...     | ... | ... | ...     | ...     |
| Potato                       | 5'04  | 3 14 11  | 9'50  | 2 13 1 | 2'01  | 0 8 5   | 1'20  | 0 3 4  | 12'71 | 3 4 10  | ... | ... | 7 19 7  | 7 15 ob |
| do.                          | 2'75  | 2 2 5    | 10'23 | 2 17 1 | 1'12  | 0 4 8   | 0'70  | 0 1 11 | 12'05 | 3 3 8   | ... | ... | 6 2 8   | 7 15 oa |
| do.                          | 2'72  | 2 1 11   | 7'52  | 2 2 0  | 3'35  | 0 14 0  | 2'48  | 0 7 0  | 13'35 | 3 3 0   | ... | ... | 6 2 2   | 7 12 oe |
| Root Guano                   | 2'46  | 1 18 4   | 8'74  | 2 8 10 | 0'25  | 0 1 1   | 3'64  | 0 10 0 | 12'63 | 2 19 11 | ... | ... | 5 15 4  | 6 16 4e |

NAMES OF SELLERS.—a—Henwood, Son, Soutter & Co. b—South African Fertilizers Co. c—Steel, Murray & Co. d—F. & G. Reiche.  
e—J. Raw & Co. f—W. Dunn & Co. g—Natal Chemical Syndicate, Ltd. h—H. C. Foss & Co., Ladysmith. i—Geo. Telfer.



## Return of Farms at Present under Licence for Lungsickness and Scab.

| STOCK INSPECTOR. | DISTRICT.           | DISEASE.             | OWNER.                    | FARM.                    |
|------------------|---------------------|----------------------|---------------------------|--------------------------|
| A. P. Craw       | Ladysmith           | Scab                 | W. Anderson ..            | Netherby                 |
|                  |                     |                      | W. M. Buys ..             | Ruit Knil                |
|                  |                     |                      | F. Colling ..             | Klipdal                  |
|                  |                     |                      | H. N. Nel ..              | Catharine                |
|                  |                     |                      | J. van de Bosch ..        | Ruther Glen              |
|                  |                     |                      | C. F. Mara's ..           | Onbekend                 |
| J. R. Cooper     | Nkandhla & Nqutu    | Lungsickness<br>Scab | H. Dicks ..               | The Cave                 |
|                  |                     |                      | A. J. Good ..             | Mat wana's Hoek          |
|                  |                     |                      | F. Stockil ..             | Olive-dale               |
|                  |                     |                      | Strinera Ka Yabya         | Tidizi Hill              |
|                  |                     |                      | Kinisenika                |                          |
|                  |                     |                      | Makwangqa                 | Selutshana               |
|                  |                     |                      | Legudhla Mnd              | Nqutu Hill               |
|                  |                     |                      | Gaga eni Chief ..         | Sandheawana              |
|                  |                     |                      | Makuba Ulife ..           | Haladu                   |
|                  |                     |                      | Menezi Kamadagata         | Kwondeka                 |
|                  |                     |                      | Boy Ka Matato ..          | Nqutu Loot               |
|                  |                     |                      | Peli ..                   | Nqutu                    |
|                  |                     |                      | Lerazake Leputza ..       | Mafethling               |
|                  |                     |                      | Abela Kuzeizili ..        | "                        |
|                  |                     |                      | Msinango Butelezi ..      | Selutstana               |
|                  |                     |                      | Sekwata Ngobeze ..        | Nqutu                    |
|                  |                     |                      | Lepondo and others        | Hlazagaza                |
|                  |                     |                      | Madwo and others          | "                        |
|                  |                     |                      | Guzi Ka Mfeka ..          | "                        |
|                  |                     |                      | Lekeniga ..               | "                        |
| A. B. Koe        | Portion of Estcourt | Lungsickness<br>Scab | Mpitipiti ..              | Sandheawana              |
|                  |                     |                      | Dak sele ..               | Selutyema                |
|                  |                     |                      | Somtomo Ngobeze           | Malagato                 |
|                  |                     |                      | Dabeni Mqube ..           | Moweni                   |
|                  |                     |                      | Jabez Mbata ..            | Nqutu Town               |
|                  |                     |                      | Albert Selepe ..          | Magubeni                 |
|                  |                     |                      | Leyarha Sondetzi ..       | Nkandi                   |
|                  |                     |                      | Letuza Mlefe ..           | Ncenceni                 |
|                  |                     |                      | Letuza Mlefe ..           | Haladu                   |
|                  |                     |                      | Lunwy za Sondelzi         | Nkandi                   |
| A. J. Marshall   | Dundee              | Lungsickness<br>Scab | Kanyiza Ntombelha         | Maogogo                  |
|                  |                     |                      | Mishaki Butelzt ..        | Nqutu                    |
|                  |                     |                      | Mbanko Dubenzana          | Telezi Hill              |
|                  |                     |                      | Mhlawafa Mhlobo           | Mkanjaio                 |
|                  |                     |                      | Lefabuselepe ..           | Nqutu                    |
|                  |                     |                      | F. R. Moor ..             | Greystones               |
|                  |                     |                      | W. C. Stockil ..          | Gleni a                  |
|                  |                     |                      | Messrs. Smit & Cartwright | Springfield and Thornley |
|                  |                     |                      | J. W. de Bruyns ..        | Roofontein               |
|                  |                     |                      | C. J. Pieters ..          | Zwaartwater              |
| E. Varty         | Western Umvoti      | Lungsickness<br>Scab | C. P. Cronje ..           | Kilburn                  |
|                  |                     |                      | G. P. Kemp ..             | Carnarvon                |
|                  |                     |                      | H. A. J. Davel ..         | Kliping                  |
|                  |                     |                      | H. P. Walker ..           | Town Lands               |
| J. J. Hodson     | Ptn of Lion's River | Lungsickness<br>Scab | T. J. Nel ..              | Mt. Ernestia             |
|                  |                     |                      | J. P. Van Rooyen          | Un'e dunt                |
| C. J. van Rooyen | Krantzkop           | Lungsickness<br>Scab | G. Woodhouse ..           | Halliwe                  |
|                  |                     |                      | F. W. Morton ..           | "The Start"              |
|                  |                     |                      | Natives ..                | Shooter's Hill           |
|                  |                     |                      | Maqanganse ..             | Loots Hoek               |
|                  |                     |                      | Uqupu ..                  | Myoniezwe's Locat'n      |
|                  |                     |                      | Ndabane ..                | "                        |
|                  |                     |                      | S. Johnson & Co. ..       | Inadie Store             |
|                  |                     |                      | Ndabane ..                | Myoniezwe's Locat'n      |
| A. H. Ball       | Weenen              | Lungsickness<br>Scab | Natives ..                | Myoniezwe's Locat'n      |
|                  |                     |                      | Amosi ..                  | "                        |
|                  |                     |                      | Umbagaza ..               | Keat's Drift             |
|                  |                     |                      | L. J. & T. C. Lotter      | Waterfall                |
|                  |                     |                      | W. H. van de West-huyzen  | W.terhoek                |

RETURN OF FARMS AT PRESENT UNDER LICENCE FOR  
LUNGSICKNESS AND SCAB—*continued.*

| STOCK INSPECTOR        | DISTRICT.            | DISEASE.     | OWNER.                             | FARM.              |
|------------------------|----------------------|--------------|------------------------------------|--------------------|
| G. Daniell ..          | Vryheid ..           | Scab         | Nkanyeze.. ..                      | Mooiplaats         |
| R. Mayne ..            | Eastern Umvoti ..    | Lungsickness | Zimbata .. ..                      | Nooitgedacht       |
| J. Burton ..           | Portion of Estcourt  | Scab         | Nkabi and others                   | Loots Hoek         |
| J. Stewart ..          | Bergville ..         | Lungsickness | Messrs. Johnstone<br>& Clark .. .. | Berg View          |
|                        |                      | "            | G. W. Horton ..                    | Hortonradford      |
|                        |                      | "            | Macomfi .. ..                      | Woodford           |
|                        |                      | "            | Lunaba .. ..                       | Hortonradford      |
| R. Wingfield Stratford | Newcastle ..         | Scab         | G. Spearman ..                     | Hortonradford      |
|                        |                      | Lungsickness | J. McDuling ..                     | Sampson            |
| J. G. Speirs ..        | Impendhle ..         | Scab         | Umloyi .. ..                       | Vrede              |
| A. Brown ..            | Polela and Underberg | "            | Pinda, Vete & Sobuon               | Furth              |
|                        |                      | "            | H. A. Robinson ..                  | Manston's Court    |
|                        |                      | "            | J. Fell .. ..                      | Dunvia             |
|                        |                      | "            | T. De C. Arbuckle                  | Costmore           |
| L. Trenor ..           | Harding .. ..        | Lungsickness | Madunckana ..                      | Tridale            |
|                        |                      | "            | Yanyan .. ..                       | Mio shwa           |
|                        |                      | "            | G. Daddy .. ..                     | Harding Commonage  |
|                        |                      | "            | Makato .. ..                       | The Pastures       |
|                        |                      | "            | Uyalazis .. ..                     | Location           |
|                        |                      | "            | S. G. Thurston ..                  | Malton             |
| B. Klusener ..         | Port Shepstone ..    | "            | G. Daddy .. ..                     | Sugar Bush Cutting |
| E. J. B. Hosking ..    | Upper Unkomanzi      | Scab         | R. & E. Dennill ..                 | Misty Home         |

MANGE IN HORSES EXISTS AS UNDER.

| Name.                   | District. | Name.           | District. |
|-------------------------|-----------|-----------------|-----------|
| Pinda, Vete & Sobuon .. | Impendhle | H. Loxton .. .. | Newcastle |
|                         |           | T. Fynn .. ..   | Alexandra |

**Brands Allotted to Infected Magisterial Divisions.**

The following is a list of the brands which have been allotted to the several infected Magisterial Divisions:—Durban County, D. 2; Alexandra County, A. 2; Lower Tugela, T. 2; Mapumulo, S. 2; Inanda, B. 2; Umsinga, U. 2; Dundee, X. 2; Vryheid, V. 2; Ngotshe, H. 2; Paulpietersburg, P. 2; Nongoma, G. 2; Mahlabatini, L. 2; Ndwedwe, N. 2; Weenen County, W. 2; Umvoti, F. 2; Hlabisa, K. 2; Eshowe, E. 2; Ladysmith, R. 2; Babanango, O. 2; Ladysmith, East of Line outside infected area, R 3; Utrecht, Z. 2; Krautskop, 2 K; Umvoti Location, 2 F; Ladysmith, West of main line of Railway, R 3 on left neck; Pietermaritzburg City, 2 P.

## Meteorological Returns.

*Meteorological Observations taken at Government Stations for Month of December, 1907.*

| STATIONS.         | TEMPERATURE (IN FAHR. DEGS.). |          |                    |                    | RAINFALL (IN INCHES). |              |                             |      |                                     |                                            |
|-------------------|-------------------------------|----------|--------------------|--------------------|-----------------------|--------------|-----------------------------|------|-------------------------------------|--------------------------------------------|
|                   | Means for Month.              |          | Maximum for Month. | Minimum for Month. | Total for Month.      | No. of Days. | Heaviest rainfall in 1 day. |      | Total for Year from July 1st, 1907. | Total for same period from July 1st, 1906. |
|                   | Maximum.                      | Minimum. |                    |                    |                       |              | Fair.                       | Day. |                                     |                                            |
| Observatory ..    | 80.0                          | 65.8     | 89.3               | 59.6               | 3.97                  | 13           | .81                         | 20th | 19.28                               | 21.87                                      |
| Stanger ..        | 84.1                          | 64.4     | 105                | 57                 | 4.40                  | 22           | 1.15                        | 14th | 22.66                               | 21.99                                      |
| Verulam ..        | 89.1                          | 66.0     | 104                | 59                 | 3.32                  | 14           | .69                         | 14th | 19.79                               | 16.83                                      |
| Greytown ..       | 82.2                          | 50.4     | 100                | 38                 | 5.28                  | 19           | 1.43                        | 3rd  | 18.70                               | 14.61                                      |
| Newcastle ..      | 85.1                          | 59.1     | 95                 | 50                 | 8.10                  | 13           | 3.20                        | 2nd  | 21.41                               | 23.74                                      |
| Mid-Dlolo ..      | 76.5                          | 57.6     | 101                | 48                 | 4.60                  | 21           | .85                         | 22nd | 21.96                               | 20.63                                      |
| Estcourt ..       | 85.7                          | 56.7     | 110                | 50                 | 4.45                  | 12           | 1.40                        | 3rd  | 13.38                               | 11.86                                      |
| Buwer ..          | —                             | —        | —                  | —                  | 8.04                  | 22           | 1.90                        | 20th | 22.74                               | —                                          |
| Camperdown ..     | 83.2                          | 48.1     | 95                 | 40                 | 5.9                   | 16           | 1.60                        | 27th | 16.28                               | 18.46                                      |
| Ndwedwe ..        | 74.2                          | 61.6     | 84                 | 55                 | 4.30                  | 23           | .70                         | 28th | 17.85                               | 20.55                                      |
| Port Shepstone .. | 79.4                          | 56.0     | 86                 | 46                 | 3.46                  | 15           | .57                         | 20th | 18.70                               | 22.67                                      |
| Umzinto ..        | 90.3                          | 55.5     | 95                 | 54                 | 3.23                  | 12           | 1.52                        | 19th | 17.83                               | 23.37                                      |
| Richmond ..       | 78.1                          | 56.5     | 96                 | 46                 | 7.67                  | 23           | 1.10                        | 27th | 23.95                               | 19.68                                      |
| Maritzburg ..     | 80.7                          | 58.7     | 97                 | 48                 | 5.90                  | 22           | 2.45                        | 27th | 19.81                               | 21.22                                      |
| Howick ..         | 78.8                          | 57.4     | 93                 | 44                 | 7.83                  | 18           | 2.20                        | 27th | 21.31                               | 18.39                                      |
| Vryheid ..        | 82.8                          | 55.1     | 93                 | 47                 | 6.51                  | 9            | 1.74                        | 16th | 19.20                               | 19.03                                      |
| Dundee ..         | 84.7                          | 57.9     | 95                 | 50                 | 6.82                  | 6            | 3.30                        | 2nd  | 18.57                               | 16.79                                      |
| Weenen Gaol ..    | 91.2                          | 60.6     | 104.5              | 53                 | 4.45                  | 13           | 1.32                        | 2nd  | 13.69                               | 11.47                                      |
| Impendhle ..      | 72.5                          | 53.4     | 85                 | 42                 | 7.17                  | 19           | 1.36                        | 2nd  | 20.71                               | 16.15                                      |
| New Hanover ..    | 84.3                          | 58.3     | 100                | 45                 | 5.97                  | 21           | 1.25                        | 7th  | 22.12                               | 22.53                                      |
| Krantzkop ..      | 84.4                          | 57.2     | 98                 | 53                 | 4.96                  | 19           | 1.98                        | 20th | —                                   | —                                          |
| Charlestown ..    | 78.0                          | 51.5     | 96                 | 38                 | 5.24                  | 14           | .95                         | 5th  | 17.54                               | 23.57                                      |
| Nqutu ..          | 80.0                          | 55.7     | 90                 | 46                 | 3.41                  | 13           | 1.30                        | 2nd  | 14.25                               | —                                          |
| Mtunzini ..       | 83.6                          | 52.8     | 98                 | 42                 | 4.32                  | 9            | 1.75                        | 20th | 29.18                               | —                                          |
| Ilabisa ..        | 81.2                          | 62.6     | 90                 | 56                 | 2.52                  | 5            | 1.15                        | 19th | 18.40                               | 24.13                                      |
| Melmoth ..        | 81.3                          | 60.2     | 100                | 53                 | 4.14                  | 23           | 1.68                        | 28th | 15.41                               | 20.64                                      |
| Ubonbo ..         | 86.1                          | 63.4     | 90                 | 55                 | 2.63                  | 9            | .80                         | 4th  | 19.35                               | 27.90                                      |
| Ingwavuma ..      | 82.5                          | 66.2     | 98                 | 54                 | 2.33                  | 14           | .50                         | 3rd  | 14.65                               | —                                          |
| Point ..          | —                             | —        | —                  | —                  | 3.84                  | 15           | .55                         | 14th | 22.54                               | 22.63                                      |
| Mahlabatini ..    | 82.8                          | 55.0     | 92                 | 48                 | 2.54                  | 9            | .78                         | 3rd  | 17.20                               | 17.37                                      |
| Empangeni ..      | 84.5                          | 63.9     | 97                 | 59                 | 3.28                  | 8            | 1.71                        | 20th | 20.98                               | —                                          |
| Antikulu ..       | 86.0                          | 63.2     | 102                | 57                 | 4.66                  | 17           | 1.65                        | 20th | 17.23                               | 15.91                                      |
| Imbizana ..       | —                             | —        | —                  | —                  | 4.37                  | 12           | 1.16                        | 21st | 19.54                               | —                                          |

*Meteorological Observations taken at Private Stations for Month of December, 1907.*

| STATIONS.                        | TEMPERATURE (IN FAHR. DEGS.) |                    | RAINFALL (IN INCHES). |              |                             |      |                                     |                                       |
|----------------------------------|------------------------------|--------------------|-----------------------|--------------|-----------------------------|------|-------------------------------------|---------------------------------------|
|                                  | Minimum for Month.           | Maximum for Month. | Total for Month.      | No. of Days. | Heaviest rainfall in 1 day. |      | Total for Year from 1st July, 1907. | Total for same period from July 1906. |
|                                  |                              |                    |                       |              | Fall.                       | Day. |                                     |                                       |
| Nottingham Road ..               | —                            | —                  | 9.13                  | 17           | 3.25                        | 28th | 27.90                               | 16.74                                 |
| Adamshurst (Wm. Adams) ..        | 91                           | 49                 | 4.80                  | 19           | .75                         | 15th | 17.01                               | 9.88                                  |
| Hilton ..                        | 88                           | 45                 | 6.65                  | 21           | 1.12                        | 7th  | 21.77                               | 14.79                                 |
| P. M. B., Town Bush Valley ..    | —                            | —                  | 8.20                  | 23           | 1.57                        | 27th | 25.59                               | 18.38                                 |
| Ottawa ..                        | —                            | —                  | 3.56                  | 15           | .78                         | 15th | 19.73                               | 16.85                                 |
| Mt. Edgecombe (Natal Estates) .. | —                            | —                  | 3.60                  | 17           | .82                         | 15th | 23.43                               | 17.18                                 |
| Corubia ..                       | —                            | —                  | 2.89                  | —            | —                           | —    | 17.59                               | 15.29                                 |
| Milkwood Kraal ..                | —                            | —                  | 3.23                  | —            | —                           | —    | 16.38                               | 13.93                                 |
| Blackburn ..                     | —                            | —                  | 2.97                  | —            | —                           | —    | 16.59                               | 13.17                                 |
| Saccharine ..                    | —                            | —                  | 3.46                  | —            | —                           | —    | 17.69                               | 11.75                                 |
| Equeefa (W. Hawksworth) ..       | 95                           | 55                 | 3.69                  | 18           | .78                         | 20th | 22.86                               | 19.72                                 |
| Umzinto, Beneva ..               | —                            | —                  | 3.73                  | 13           | .99                         | 20th | 22.30                               | 17.85                                 |
| Riet Vlei ..                     | —                            | —                  | 3.91                  | 16           | .87                         | 21st | 14.89                               | —                                     |
| Dalton (Fawn Leas P. O.) ..      | —                            | —                  | 3.80                  | 18           | .55                         | 15th | 17.41                               | —                                     |
| Branxholme ..                    | —                            | —                  | 10.43                 | 17           | 2.36                        | 7th  | 40.31                               | —                                     |
| Cedara—Vlei Station ..           | 90.5                         | 43.5               | 6.33                  | 14           | 1.72                        | 27th | 19.37                               | —                                     |
| Winkel Spruit ..                 | 89                           | 58                 | 4.45                  | 15           | .82                         | 27th | 23.06                               | 22.84                                 |
| Weenen ..                        | 99                           | 43                 | 3.55                  | 9            | 1.40                        | 2nd  | —                                   | 10.96                                 |
| Giant's Castle ..                | 78.2                         | 50.8               | 2.79                  | —            | —                           | —    | 11.70                               | —                                     |



## **Fees for Agricultural Analysis.**

It is hereby notified that Farmers and others can secure analytical determinations from the Government Laboratory, Central Experiment Farm, Cedara, in accordance with the following scale of fees, which is subject to revision:—

|                                                                            | Scale I. | Scale II. |
|----------------------------------------------------------------------------|----------|-----------|
| FERTILIZERS AND FEEDING STUFFS:                                            | £ s. d.  | £ s. d.   |
| Determination of 1 constituent ...                                         | 0 7 6    | 0 5 0     |
| "          2 or 3 constituents ...                                         | 0 15 0   | 0 10 0    |
| Complete analysis ...                                                      | 1 1 0    | 0 15 0    |
| SOILS: Partial analysis of a soil in relation<br>to its fertility ...      | 1 1 0    | 0 10 6    |
| Complete analysis of a soil ...                                            | 2 2 0    | 1 1 0     |
| WATER: Irrigation and drainage ...                                         | 1 10 0   | 0 10 6    |
| VEGETABLE PRODUCE: Fodders, Ensilage,<br>Grains, &c. ...                   | 1 1 0    | 0 15 0    |
| MILK, CREAM, BUTTER: Fat only ...                                          | 0 5 0    | 0 2 6     |
| "          : Complete ...                                                  | 0 15 0   | 0 7 6     |
| WATTLE BARKS AND TEA: Tannin ...                                           | 0 5 0    | 0 2 6     |
| CATTLE DIPS: Quantitative analysis of 1<br>to 3 principal constituents ... | 0 10 0   | 0 5 0     |
| INSECTICIDES:                                                              |          |           |
| Qualitative analysis each constituent ...                                  | 0 5 0    | 0 2 6     |
| Quantitative " " " ...                                                     | 0 10 6   | 0 5 0     |

Scale No. 1 is applicable to samples handed in by Merchants and Dealers, and where trade interests are involved.

Scale No. 2 is applicable to samples forwarded by *bona fide* Farmers and Gardeners.

Samples will be accepted at the discretion of the Department, and must be properly selected and labelled.

The Department reserves the right to publish the results of any analysis performed by it; and, where such is deemed of sufficient public interest, it will remain at the discretion of the Department to remit any charges hereunder.

E. R. SAWER,

November 22nd, 1907.

Director, Experiment Stations.

All the cattle in Belgium have a registered trade number, engraved on a ring fastened to the ear of each beast.

## Pound Notices.

NOTIFICATION is contained in the *Government Gazette* of the sale, unless previously released, of the undermentioned live stock on the dates specified:—

### ON THE 5TH FEBRUARY.

*Acton Homes*—Red Africander bull, four years old, slit in the end of each ear, branded G on right leg. Probable value £6. Impounded on the 31st December, 1907, by G. Mdhlozini.

*Gourton*—Grey stallion, about 4 years old, no brands. Probable value £5. (Running on the farm Waai Plaats, Estcourt Division, and reported by H. Martz as too wild to be driven to the Pound.)

*Howick*—(1) Dun or mouse-coloured gelding, left hind foot white, blaze down face, no brands. (2) Light bay mare, white spot on forehead and nose, no brands.

*Woodstock* (Bergville Division)—(1) Dark red bull, branded what looks like ExS on right hip, double winkelhaak on left ear, age about three years. Probable value, £6. (Impounded on 24th December by J. G. Fannin.) (2) Black and white bull, white brand over both shoulders, and also over both hips, white stomach, chest, and legs, white star on forehead, no brands, no marks, age about three years. Probable value, £6. (Impounded on 17th December by Bechan.)

### ON THE 12TH FEBRUARY.

*Harding*—Brown stallion, 2 years old, long tail, no brands. Probable value, £5. (Impounded on the 20th December by R. E. H. Stafford.)

*Loteni* (Impendhle Division)—Running on the farm Snowtop, Loteni, occupied by Mr. J. R. Taylor, and reported too wild to be driven to the Pound: (1) Dark brown bull, 2 years old, rising 3, no brands. Probable value, £2. (Reported on the 18th December by J. R. Taylor.) (2) Dark brown bull, 3 years old, rising 4, no brands. Probable value, £3. (Reported on the 18th December by J. R. Taylor.)

*Middledale* (Klip River Division)—Yellow Zulu bull, white face, slit in back of each ear. Probable value, £6. (Impounded on the 3rd January by G. C. Potgieter.)

### ON THE 19TH FEBRUARY.

*Dundee*—Grey mare donkey, slit point right ear, snip back left ear, branded MZ off side neck.

*Estcourt*—(1) Red cow and calf, branded J. C. (Impounded by W. E. Oates, Highlands, on December 23rd, 1907.) (2) Bay stallion, white blaze on face, no brands, age rising two.

*Finchley* (Ixopo Division)—Black and white spotted pig, sow, with three young white pigs, about six weeks old.

*Fort Louis* (Babanango Division) Mule, mare; colour, pale grey; brands, left side neck V.S., left shoulder G, hind hip J.

*Gourton*—Black ox, four years old, branded 96 on off side hip, snip cut out of tip of right ear.

*Harding*—(1) Chestnut mare, no brands. (2) Grey mare, white hind foot, no brands.

*Hatting Spruit*—(1) White mule, mare, about 14 hands, branded near side J C. (2) White mule, mare, about 14 hands, branded near side g. (Impounded December 30th.)

*Ingogo*—Running on the farm Schaapkrantz, Spitskop, and too wild to be driven to the Pound: Dark brown mare, about 14 hands, hind feet white, long mane and tail, star, branded on near side A.V., and on off side triangle. Is of sturdy build, and in good condition.

*Mooi River*—Black ox, 2 years old, little white on both flanks, no brands or marks. *Mountain View* (Newcastle Division)—Blue goat, 2 or 3 months old, top off near ear. (Impounded by Mr. G. Harvey, of Torkuta Pass, on 28th December.)

*Nqutu*—Brown ox, tail cut off, no brands, about three years.

*Serpentine* (Newcastle Division)—Two Merino ewes, with lambs, all ear marked, left ear swallow tail and cut in back of same, no brands.

*Umsinga*—Four Africander sheep, 3 black ewes, 1 black and white young ram.

*Vergelegen* (Vryheid Division)—(1) Black roan donkey, yellow muzzle, branded

H.J. indistinct on left hind quarter, left ear a nitch like half moon. (2) Black donkey, mare, yellow muzzle, indistinct brand on right hip. (Both in poor condition, and with harness marks.)

ON THE 4TH MARCH.

*Bulwer*—(1) Young black ox, about 2 years old, right ear slit, left ear stump, branded horseshoe right hip. (2) Black ewe goat square cut out front of right ear, no other marks. (Impounded by W. H. Wilkinson, Half-my-Right, Polela.) (3) Bay gelding, about 14 hands, short tail, right hind foot white, little white inside left hind fetlock, left front foot little white, half moon cut out of right ear, front and back, about 8 years old. (Impounded by Native Pungu, Pata's Location, Polela.)

*Estcourt*—Grey mare, 14 hands, no brands. (Impounded by Natal Police, Estcourt, January 1st.)

*Ginginhlovu*—(1) Bay gelding, black points, 14 hands, tip out of off ear, no brands, (2) Bay mare, 14.2, off hind foot white, star on forehead, shod on front feet, mane cut, no brands.

*Gourton*—(1) Black and white cow, no marks. (2) Red brindled calf.

*Greenwood Park*—Yellow ox, branded C on right hip.

*Ingogo*—Two sheep, one ewe, very old and thin, and one nine months' old lamb, no marks.

*Utrecht*—Running on the farm "Nooijensboom," and reported by Mr. J. J. du Plessis as being too wild to be driven to the Pound: (1) Red cow, about 8 years old, branded H. J. and G. V right hind quarter, no marks. Value, about £4. (2) Black and white bull calf, no brands or marks. Value, about £1.

*Woodstock* (Bergville Division)—Rusty coloured kapiter goat, swallow tail in end of left ear, and winkelhaak out of back and front of same, end cut off right ear, and winkelhaak out of front of same.

CHANGES.

The Pound at *Creighton*, Ixopo Division, has been abolished as from the 1st January. The Pound at *Umsikazi*, Alexandra Division, has also been abolished, and another has been established on the farm "Pine Tree Cottage," in the same Division, to be known as the *Pine Tree Pound*, with Mr. A. G. Goldstone, P.O. Umsinsini, as keeper thereof. A similar change has taken place in the Newcastle Division, the Pound at *Serpentine* having been abolished, and another, at *Klip Spruit*, Normandien, established with Mr. W. M. Rathbone as keeper. A Pound has also been established at *Empangeni*, with Mr. S. Galvesen as keeper. Mr. E. Larkan has been appointed keeper of the Pound at *Harding*, in the place of Mr. A. E. Robinson.

## ***Agricultural Shows, 1908.***

CAMPERDOWN (Camperdown Agricultural Association).—Date not yet fixed. W. E. Allsopp, Cato Ridge, *Secretary*.

DUNDEE (Dundee Agricultural Society).—Show, 18th and 19th June. Entries close 4th June. J. McKenzie, Dundee, *Secretary*.

GREYTOWN (Greytown Horticultural Society).—Show, 13th February. Entries close 12th February. J. M. Handley, Southfield, Greytown, *Secretary*.

HIMEVILLE (Himeville Agricultural Society).—Show, 14th May. Entries close 25th April. G. Palframan, *Secretary*.

KLIP RIVER (Klip River Agricultural Society).—Date not fixed. E. V. Bambrick, Box 90, Ladysmith, *Secretary*.

RICHMOND (Richmond Agricultural Society).—Show in July: date not fixed. Cecil Williams, Richmond, *Secretary*.

WEENEN (Weenen Agricultural Society). Show, 16th June. Entries close 6th June. E. Catherley, South Downs, Estcourt, *Secretary*.

SOCIETIES HOLDING NO SHOWS.

Byrne Agricultural Association.  
Donnybrook Farmers' Association.  
Eshowe District Farmers' Association.  
Frere Farmers' Association.

Little Tugela Farmers' Association.  
New Hanover Agricultural Association,  
Umvoti Farmers' Association,  
Gourton Farmers' Association.



## **Executives of Farmers' Associations.**

**ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION.**—President: Wm. Thompson. Hon. Vice-Presidents: A. Blamey, E. W. Hawksworth, Thos. Kirkman, H. Bazley, J. L. Knight, R.M. Hon. Secretary and Treasurer: Geo. Lam. Hon. Auditor: W. B. Brunner. Committee: W. Arnott, H. G. Arbuthnot, R. C. Archibald, R. G. Archibald, J. Bazley, A. Behrmann, W. Cooke, G. J. Crookes, R. Cruickshank, H. D. Hawksworth, H. E. Hawksworth, A. F. W. Hawksworth, R. C. Hawksworth, J. Landers, D. McAndrew, F. Nelson, C. A. Preston. Dr. Rouillard, W. A. Gilbert, Fred Blamey, Rev. B. M. Ford, S. C. Hawksworth, J. C. Landers, S. F. Crookes, J. J. Crookes, R. A. Lindsay, J. A. Curle, F. B. Preston, R. Parkin, H. Reynolds, J. B. Stewart, C. Taylor, H. H. P. Waller, J. Ross, Rev. W. C. Wilcox, Dr. W. P. Tritton.

**ALFRED COUNTY FARMERS' ASSOCIATION.**—President: A. G. Prentice, J.P. Vice-Presidents: C. Knox, J.P., L. T. Trenor, and C. A. Holwell. Hon. Secretary and Treasurer: H. C. Hitchins. Committee: C. M. Etheridge, R. Fann, J.P., V. Hutchins, S. Aitchison, J.P., W. B. Rethman, Dr. Case, J.P., H. Rethman, R. G. Mack, J. Hogg.

**BOSTON FARMERS' ASSOCIATION.**—President: Thomas Fleming. Vice-President: J. Geldert. Hon. Secretary and Treasurer, W. J. Fly.

**CAMPERDOWN AGRICULTURAL SOCIETY.**—President: John Moon, J.P. Vice-Presidents: J. Gavin and John W. Harvey, J.P. Hon. Secretary: W. E. Allsopp.

**CAMPERDOWN AND DISTRICT FARMERS' ASSOCIATION.**—President: John Moon, J.P. Vice-President: F. N. Meyer. Hon. Sec: J. Baker. Committee: H. Baker, J. Gavin, J. W. Harvey, J.P., W. B. Turner, H. H. Hutton, C. Baker, H. E. Meyer.

**DUNDEE AGRICULTURAL SOCIETY.**—President: F. Turton, J.P. Vice-Presidents: The Minister of Agriculture, the Mayor of Dundee, Messrs. A. L. Janseu, H. Wiltshire, and T. P. Smith. Hon. Secretary and Treasurer: J. McKenzie. Committee: D. C. Pieters, D. Macphail, M. Taylor, A. W. Smallie, W. Craig, C. G. Willson, D. G. Smith, A. Grice, W. J. H. Muller, E. G. Wobnitz, G. M. de Waal, B. J. Humann, W. H. Doidge, R. Retallack, H. Ryley, H. J. Head, A. S. Pieters, R. R. Mortimer, C. Vermaak, A. E. Norman, W. V. Marshall, H. P. Handley, J. Dyson, T. J. Harvey.

**DURBAN COUNTY FARMERS' ASSOCIATION.**—Patron: J. H. Colenbrander. President: J. McIntosh. Vice-Presidents: H. Westermeyer, R. R. McDonald. Committee: F. R. W. Boehmer, G. Compton, H. Freese, W. Freese, W. Gillitt, H. W. Koenigkramer, H. W. Nichols, F. Schaefermann. Hon. Sec. and Treasurer: Frank J. Voeck.

**ESHOWE DISTRICT FARMERS' ASSOCIATION.**—President: J. R. Pennefather. Vice-President: C. F. Adams. Secretary: T. Parkins. Treasurer: W. T. Brockwell.

**GOURTON FARMERS' ASSOCIATION.**—President: W. C. Stockil, Esq., J.P. Vice-President: M. Sandison, Esq. Hon. Secretary and Treasurer: Frederick B. Burnard, Esq.

**HATTING SPRUIT FARMERS' ASSOCIATION.**—President: J. Campbell. Vice-President: A. W. Smallie. Hon. Secretary and Treasurer: R. J. Hearn. Committee: G. Queddon, T. P. Smith, W. A. Helmer, Thos. Brookes, N. Glutz, Wm. Craig, W. E. Quested, J. A. Brookes, W. T. Heslop, Thos. Dewar, F. Turton, W. H. Tatham, A. E. Norman, D. P. Campbell.

**HIMEVILLE AGRICULTURAL SOCIETY.**—President: Henry C. Gold, Dartford, Polela. Vice-Presidents: W. Little, F. E. Peto, G. Malcolm. Hon. Sec. and Treasurer: G. Palframan, Watermead, Polela. Executive Committee: G. Malcolm, W. S. Johnston, P. McKenzie, W. Little, G. Royston. Yard Steward: H. Brown. Auditors: T. C. Dearlove and T. E. Marriott.

**HOWICK FARMERS' ASSOCIATION.**—Chairman, Thos. Morton; Vice-Chairman, M. A. Sutton; Hon. Secretary and Treasurer, A. Clark.

**INGOGO FARMERS ASSOCIATION.**—President: Angus Wood, J.P. Vice-Presidents: G. A. Fimstone and J. Browning. Hon. Secretary and Treasurer: C. Watt.

**IXOPO AGRICULTURAL SOCIETY.**—President: F. L. Thring, J.P. Vice-Presidents: Col. W. Arnott, B.M.R., W. K. Anderson, J.P., C. E. Hancock, J.P. Committee: John Anderson, Thos. Allen, J. C. Auld, H. D. Archibald, F. S. Benningfield, S. Boyd, T. L. Clarence, F. E. Foxon, R.M., Wm. Foster, Jas. T. Foster, C. C. Foster, Geo. E. Francis, L. Gray, A. M. Greer, J.P., J. R. Greer, Wm. Gold, H. A. Hill, C. F. Harris, A. E. Keith, R. Kennedy, Geo. Martin, W. Oakes, L. J. Phipps, T. F. Remfry, J. W. Robinson, Jas. Schofield, M.L.A., D. C. Smail, A. Stone, W. R. Way, A. H. Walker, M.L.A., P. D. Webb. Hon. Sec.: G. C. Way. Hon. Ass. Sec.: A. G. Harris. Hon. Treasurer: T. Arnott.

**IXOPO FARMERS' ASSOCIATION.**—President: A. E. L. Keith, Ixopo. Vice-Presidents: Geo. Martin, Claybrooke, Ixopo; A. Kirkman, Lufafa, Ixopo. Hon. Secretary and Treasurer: Geo. E. Francis, Morningview Ixopo. Delegates to Farmers' Union: President and James Foster. Committee: F. Remfry, R. Vause, C. E. Hancock, John Anderson, R. Greer, W. Oakes, D. Campbell, G. C. Way, James Foster.

**KLIP RIVER AGRICULTURAL SOCIETY.**—President: Walter Pepworth, J.P. Vice-Presidents: Daniel Bester, J. G. Bester, Wm. A. Illing. Secretary and Treasurer: Edward V. Bambrick (Box 50, Ladysmith). Executive Committee: A. Brink, J. Farquhar, C.M.G., M.L.A., W. C. Hattingh, J. G. Hyde, Trev. Hyde, A. L. Horsley, W. Freer, L. A. Leonard, H. Nicholson, H. C. Thornhill, Herman Illing, D. Munger, P. de Waal, J. H. Newton, D. Sparks, J.P., J. T. Francis, A. W. (Gus) Illing, G. Pinkney, W. Cochrane, George L. Coventry, and *ex officio* officers.

**KRANTZKOP FARMERS' ASSOCIATION.**—President: Capt. M. Landsberg. Vice-President: P. R. Vermaak. Hon. Sec. and Treasurer: Dr. L. L. Proksch. Committee: C. J. van Rooyen (Albany), C. J. van Rooyen (Wonderfontein), Philip Nel, J. A. G. Mare, L. M. G. van Rooyen, J. C. Martens.

**LION'S RIVER DIVISION AGRICULTURAL SOCIETY.**—President: Graham Hutchinson. Vice-President: H. Nisbet. Executive Committee: H. Nisbet, M. A. Sutton, A. J. Holmes, J. Humphries, Jno. Pole, and W. A. Lawton. Auditor: W. J. R. Harvard. Hon. Sec. and Treasurer: Arthur F. Dicks, P.O. Box 1, Howick.

**LITTLE TUGELA FARMERS' ASSOCIATION.**—President: F. van de Waal. Vice-President: F. G. King. Secretary and Treasurer: H. L. Frances. Auditor: A. D. Buchanan. Committee: R. P. Summersgill, F. W. Holmes, J. P. Wepenaar, J. J. Harding, Max Cameron.

**LOWER TUGELA DIVISION ASSOCIATION.**—President: T. G. Colne, brander. Vice-President: Lieut. Col. F. Addison. Hon. Secretary and Treasurer: H. Curtis Smith. Committee: A. S. L. Hulett, A. E. Foss, G. Stewart, J. B. Hulett.

**LOWER UMZINKULU AGRICULTURAL ASSOCIATION.**—President: D. C. Aiken, J.P. Vice-Presidents: H. Albers and C. H. Mitchell, J.P. Hon. Secretary and Treasurer: W. J. Plows. Committee: C. Manning, J. W. Aiken, W. G. Camp, T. F. Godwin, J. Hutton, H. Norden and A. Borchard. Hon. Secretary, Show Committee: J. W. Aiken. Show Committee: A. E. Collison, A. Borchard, F. Knoop, A. Ringo, H. F. Voigts, J. Hutton, C. Manning, A. J. Lugg and H. Albers. Hon. Auditor: J. W. Aiken.

**MID-ILLOVO FARMERS' CLUB.**—Chairman: L. G. Wingfield-Stratford, J.P. Vice-Chairman: B. B. Evans. Hon. Secretary: J. W. V. Montgomery. Assistant Hon. Secretary: S. C. Phipson. Hon. Treasurer: Jos. McCullough.

**MOOI RIVER FARMERS' ASSOCIATION.**—President: R. Garland. Vice-President: C. B. Lloyd. Hon. Treasurer: H. A. Rohde. Collector: Capt. W. H. Stevenson. Auditor: Claude Scott. Hon. Secretary: H. B. Hall.

**MUDEN AGRICULTURAL ASSOCIATION.**—President: Thos. Thresh. Vice-Presidents: Wm. Lilje, E. A. Grantham. Secretary and Treasurer: C. A. Selling. Committee: Otto Rottcher, Karl Lilje, Karl Rotter, Herman Schafer, Fritz Torlage, T. Braithwaite, Ernest Rottcher, C. H. Tilbrook, Rev. H. Rottcher (Hon. Life Member).

**NEWCASTLE.**—President: F. A. R. Johnstone, J.P. Vice-President: C. Earl, J.P., Mayor of Newcastle; Angus Wood, J.P., Ingogo; O. Schwikkard, C.M.G., Newcastle. Secretary: Wm. Beardall. Treasurer: Ed. Nicols. Executive Committee: L. H. S. Jones, E. Phillips, H. C. Caldecott, C. Watson, G. Langley, W. A. Lang, W. J. P. Adendorff, J. E. de Wet, O. Davis, S. W. Reynolds, B. Pettigrew, G. W. Thomas, G. H. Bishop, H. R. Muir, M. C. Adendorff, W. Napier, P. Van Breda, Chriss Potha, G. Temple.

**NEW HANOVER AGRICULTURAL ASSOCIATION.**—President: G. C. Mackenzie. Vice-Presidents: J. C. Watt, J.P., and R. H. Oellermann. Life Member: C. A. S. Yonge, M.L.A. Secretary and Treasurer: W. D. Stewart, New



Hanover. Auditor: J. H. F. Hohls. Committee: W. N. Angus, E. Bentley, W. W. Bentley, Edward Boast, E. E. Comins, G. R. Comins, C. Crookes, jun., H. Dinkelmann, J. Duval, W. Fortmann, Dr. C. H. Herbert, J. Hillermann, J. H. F. Hohls, H. Jacobson, H. A. Light, G. C. Mackenzie, A. F. Mackenzie, T. M. Mackenzie, J. Muirhead, J. P. Oswald Muirhead, G. Moe, J. P., J. Moe, O. Moe, C. Oellermann, F. Oellermann, C. J. Oellermann, W. Ortmann, J. C. Otte, E. Peckham, J. P., J. A. Potterill, S. Peckham, C. M. Scott, Rev. J. Scott, Wm. Schröder, J. P., Owen Solomon, J. H. Smith, Riby Smith, P. Thöle, H. Vorwerk, H. F. Westbrook, W. H. Westbrook, C. Westbrook, T. Wolhuter.

NOODSBERG ROAD AGRICULTURAL ASSOCIATION.—President: Fritz Reiche, J. P.; Vice-Presidents: H. Mummbrauer, P. Rodehorst, W. Dralle, W. Wortmann; Committee: W. Bartels, F. Bosse, H. Bramer, A. J. Bruyns, H. Bruyns, Carl Dralle, H. Gebers, W. Gevers, J. H. Holley, jr, W. C. Holley, C. Hillermann, L. Koch, H. Köhler, F. E. Kuhn, M. Maister, H. Merels, A. Meyer, H. Meyer-Estorf, H. W. Meyer, K. A. Meyer, H. Misselhorn, W. Misselhorn, K. Peters, I. Pfoenhauer, G. Rabe, G. Reiche, Joh. Reiche, W. Rencken, H. Rosenbrock, H. Schmidt, K. Schmidt, Rev. Jas. Scott, K. Seele, F. J. Smith, J. Thies, W. Witthöft, P. Wortmann, A. Wortmann, F. Wortmann, H. Wortmann, Secretary: Paul Vietzen, P.O. Singletree; Hon. Treasurer: E. Beurlen.

NOTTINGHAM ROAD FARMERS' ASSOCIATION.—President: W. Henwood, J. P. Vice-President: J. King, J. P. Auditor: A. Mengens, Secretary and Treasurer: C. J. King, Nottingham Road.

PIETERMARITZBURGSCH BOEREN VEREENIGING.—President: D. P. Boshoff; Secretary: E. G. Jansen, 313, Loop Street, Maritzburg.

RICHMOND AGRICULTURAL SOCIETY.—President: John Marwick. Vice-Presidents: W. P. Payn, A. W. Cooper, J. W. McKenzie and Chas. Nicholson. Honorary Treasurer: R. Nicholson. Hon. Secretary: Tom M'Crystal. Committee: J. W. T. Marwick, Evan Harries, R. A. McKenzie, F. O. Howes, H. M. Moyes, W. Comrie, Thos. Marwick, J. C. Nicholson, J. W. Flett and E. J. B. Ho king.

RICHMOND ROAD FARMERS' ASSOCIATION.—President: Thos Stead, J. P. Vice-President: W. Mapstone. Secretary and Treasurer: W. L. Stead, New Leeds, P.O. Committee: D. Malcolm, J. Mapstone, W. P. Payne, J. James, J. Sinclair, W. S. Crouch, H. B. Boyd, W. Middleton, W. Oldfield, T. E. Horwood.

ROYAL AGRICULTURAL SOCIETY OF NATAL.—President: Sir G. M. Sutton, K.C.M.G. Vice-Presidents: W. S. Crart, Jas. King, D. C. Dick, G. J. Macfarlane, C.M.G., O. Hosking, with His Worship the Mayor, *ex officio*. Secretaries, Treasurers and Collectors: Duff, Eadie & Co., 12, Timber Street, Pietermaritzburg. Yard Superintendent: H. J. Stirtion. Auditor: G. V. Lambert. General Committee: T. J. Allison, W. H. Buchanan, F. G. Burchell, W. H. Copley, P. H. Campbell, R. Comins, W. P. Gough, E. S. Goodwill, K. H. Hathorn, K.C., T. W. J. Hall, J. Hall, A. W. Herbert, L. Line, Col. Sir D. Mackenzie, K.C.M.G., Jas. Morton, Sir T. K. Murray, Jno. Moon, W. J. O'Brien, P. Otto, R. H. Pepworth, J. P. Potterill, A. Robinson, Rev. J. Scott, P. D. Simmons, H. Solomon, W. L. Stead, H. J. Stirtion, Dr. Oddin Taylor, F. W. Jameson, S. J. Mason. Executive Committee: President, Vice-Presidents and W. J. O'Brien, A. W. Herbert, W. H. Copley, K. H. Hathorn, K.C., and Col. E. M. Greene. Members appointed by Corporation: Councillors Ireland, Sanders and Hathorn.

SLANG RIVER (UTRECHT) FARMERS' ASSOCIATION.—Chairman: P. J. Kemp; Executive Committee: J. J. Uys, J. Z. Moolman, T. J. Botha, P. J. Viljoen, P. J. Kemp; Hon. Sec. and Treasurer, Thys Uys, Utrecht P.O.

UMVOTI AGRICULTURAL SOCIETY.—President: Major T. Menne. Vice-Presidents: Theunis J. Nel, M.L.A., W. J. Slatter, W. L'Estrange. Executive Committee: Tol Nel, A. Newmarch, W. Lilje, O. Rottcher, S. C. Van Rooyen, W. Newmarch, E. J. Van Rooyen, O. Norton, I. M. Nel, J. Browning. Managers of Show Yard: J. M. Handley and N. Hunter. Hon. Auditor: W. K. Ente. Secretary and Treasurer: W. H. Gibbs.

UMVOTI FARMERS' ASSOCIATION.—President: P. R. Botha (J.'s son). Vice-President: J. M. Handley. Secretary and Treasurer: G. E. Cadle (Box 6, Greytown). Auditor: J. M. Nel. Committee: W. J. Slatter, J. G. Nel, H. P. Toriage, R. J. Landsberg, A. Newmarch, P. H. van Rooyen, A. F. Handley.

UPPER BIGGARSBERG FARMERS' ASSOCIATION.—President: W. L. Oldacre. Vice-President: G. Langley. Hon. Secretary: W. F. B. Sutherland.

UTRECHT AGRICULTURAL SOCIETY.—Chairman: L. Viljoen; Vice-Chairman: B. B. Breytenbach; Members: I. Bierman, M. M. Knight, J. H. Kloppe, B. C. Hattingh, T. Botha, M. Gregory, P. L. Uys, H. P. Breytenbach; Secretary: G. J. Shawe.



UTRECHT BOEREN VEREENIGING.—President: D. J. A. van der Spuy; Secretary: G. J. Shawe, Utrecht.

VICTORIA COUNTY AGRICULTURAL SOCIETY.—President: Lieut. Colonel F. Addison; Vice-Presidents: Sir Liege Hulett, Kt., M.L.A., W. J. Thompson, Esq., J.P., J. Polkinghorne, Esq., M.L.A.; Committee: Messrs. W. H. B. Addison, G. S. Armstrong, M.L.A., C. Bishop, J.P., D. Brown, sen., J.P., W. Campbell, T. G. Colenbrander, A. E. Foss, J.P., A. S. L. Hulett, J.P., J. B. Hulett, C. Jackson, G. Nicholson, J.P., T. Polkinghorne, J. W. Perkins, J.P., E. Saunders, J.P., G. Stewart, and J. H. Stansell; Hon. Secretary and Treasurer: H. Curtis Smith (Stanger).

VRYFEID (WARD I) AGRICULTURAL SOCIETY.—President: E. Dalton. Vice-President: J. F. Potgieter. Secretary: F. Kolbe. Assistant Secretary: H. Lombaard. Committee: Secretary, Assistant Secretary, and A. von Levetzow, T. Ries, P. Grobler, F. Molman, A. Steenkamp.

WEENEN AGRICULTURAL SOCIETY.—President: Allan Stuart; Vice-Presidents: R. Garland, R. H. Ralfe, F. I. de Waal; Hon. Treasurer: F. C. Schievers; Hon. Secretary: E. Catherley; Auditor: S. Wolff; Executive Committee: Hon. H. D. Winter M.L.A., J. W. Moor, M.L.A., D. W. Mackay, T. H. Hindle and E. L. Estrange; Manager of Show Yard: S. Vaughan; Assistant: A. Clouston.

WEENEN COUNTY HORTICULTURAL SOCIETY.—Committee of Management: The President and Treasurer of the Weenen Agricultural Society and C. J. Offord, G. W. Linfoot, T. J. Nunn, Dr. Brewitt, S. Vaughan; Hon. Secretary: E. Catherley.

ZULULAND FARMERS' ASSOCIATION.—President: F. W. White; Vice-President: C. E. Symonds. Secretary: R. H. McAlister. Committee: Hon. D. C. Uij, A. W. Symonds, H. T. James, R. J. Ortlepp, J. N. R. Dixon.

ZULULAND COAST FARMERS' ASSOCIATION.—President: G. H. Hulett; Vice-President: C. Hill; Hon. Secretary and Treasurer: F. Brammage, Ginghamlova.

*(The Editor will be obliged if the Hon. Secretaries will supply him with lists of the Executives of their Associations.)*

## **Central Experiment Farm, Cedara.**

IN order to minimise interference with the general course of work on the Central Experiment Farm, Cedara, it has been found necessary to set apart one day of the week, namely, Friday, as a visitors' day.

Arrangements will accordingly be made on that day for receiving visitors and showing them round the Farm. A trap will be at Cedara Station to meet the up 9.50 a.m. train; and if intending visitors from up-country will give notice to the guard at Howick Station, on their way down, a trap will be sent to meet the train which passes through Cedara at 11.2 a.m. Visitors travelling by other trains will also be met if they will previously make arrangements by writing.

On other than the visitors' day, visitors may be received by appointment, but special attention cannot be guaranteed in regard to their being shown round.

As the catering involves such a strain upon the resources of the School of Agriculture, it has been decided to limit the number of delegates from any one Association to 25 per cent. of its membership. At least 14 days' clear notice must be given by Associations, so that there may be time to make all necessary arrangements.

In view of the fact that Parliament has refused to grant the necessary funds, the cost of railway tickets can no longer be borne by the Department of Agriculture.

All communications in connection with proposed visits to the Experiment Farm should be addressed to the Director of Experiment Stations, Cedara.

24th September, 1907.

W. A. DEANE, Minister of Agriculture

## **Employment Bureau.**

THE Department of Agriculture has received applications from the undermentioned, who are prepared to become assistants or apprentices on farms. The Department will be glad to hear from farmers willing to take young men as assistants, and to place them in correspondence with the various applicants. When communicating on the subject, farmers may refer to the applicants by quoting the numbers in the following list:—

No. 91a.—Scotchman, 42, seeks management of stud. Life experience as tenant farmer in south of Scotland, breeding, rearing, breaking and showing Clydesdales, hackneys, and half-breds. Has bought horses in Ireland and taken charge of them on board ship and while on rails. References and testimonials.

No. 97a.—Colonial, aged 22, bricklayer by trade, speaks Zulu, Dutch, and Hindustan, desires employment as a farm hand. Was on a farm in vicinity of Pretoria for six months.

No 100. —Englishman, 23, with experience gained in Richmond district, desires to get on to farm further up country. States he is active and not afraid of work. Wage no particular object.

104a.—York-hireman, 36 years of age, seeks position as manager of a farm. English and Colonial experience. Was at one time manager of an experiment station. Good references. Married.

105a.—Boy, 17, English, desires employment on a farm.

106a.—Colonial, aged 24, bricklayer by trade, desires situation on a farm. Steady and reliable, with a few months' experience of farming.

107a. —About 45 years of age, who has held positions of responsibility on the N.G.R. and Rhodesian Railways, desires employment. Produces good references.

109a.—Scotchman, 39 years of age, producing good references from his previous employers, desires to obtain on a farm light work, such as bookkeeping, superintending dispatch of produce, &c.

Farmers requiring good, steady farm hands would do well to communicate with Ensign Anderson, of the Salvation Army Shelter, Maritzburg, who constantly has good men at the Shelter who would be glad of employment at reasonable rates. Ensign Anderson pledges himself not to recommend for employment any but those he is satisfied will give satisfaction to their employers. He will be pleased to enter into correspondence with any farmer who may address him on the subject.

## **Diamond Drilling.**

SOME of the departmental diamond drilling plants are at present disengaged and available for hire for boring for either minerals or water. Particulars as to terms of hire may be obtained from the undersigned.

CHAS. J. GRAY,  
Commissioner of Mines.

## **East Coast Fever.**

### SLAUGHTER CATTLE.

THE Department of Agriculture has erected abattoirs adjoining the Government Cold Stores, Maritzburg, where people will be able to forward cattle from clean and infected areas for slaughter. Killing, chilling, and freezing can be undertaken by the Department if desired, and arrangements can also be made for the forwarding by rail of meat intended for sale in markets outside Maritzburg. This will enable farmers, who wish to dispose of their stock for slaughter and find a difficulty in so doing, to have their animals killed in Maritzburg and the meat forwarded to Durban or any other market. The abattoirs will be under the personal supervision of Mr. A. R. Burford, the Manager of the Government Cold Stores, who is thoroughly experienced in this particular class of work.

The provisional abattoir charges are :—

|                                          |                                                        |
|------------------------------------------|--------------------------------------------------------|
| Cattle per head ...                      | 1s., with a minimum of £3 per killing space per month. |
| Sheep ...                                | 1½d. each.                                             |
| Pigs... ..                               | 3d. „                                                  |
| Chilling and Freezing Beef, 1st week ... | 1s. 3d. per qr.                                        |
| „ „ „ „ 2nd „ ...                        | 1s. „                                                  |
| „ „ „ „ Remaining weeks ...              | 9d. „                                                  |
| Sheep ...                                | per week ... 3d.                                       |
| Pigs ...                                 | „ „ 6d.                                                |

Charges for killing and handling Cattle, and placing same in Cold Storage, if required, or meat to be taken away by customer from hanging-room :—

|                      |                                              |
|----------------------|----------------------------------------------|
| Cattle, per head ... | 4s. each (including abattoir fee).           |
| Sheep ...            | 6d. „                                        |
| Pigs ...             | 1s. „ up to 200 lbs.                         |
| „ ...                | 1s. 6d. each, over 200 lbs. & up to 300 lbs. |
| „ ...                | 2s. „ over 300 lbs.                          |

Department of Agriculture, Maritzburg,  
9th April 1907.

W. A. DEANE,  
Minister of Agriculture.

A “meat war” is said to be in progress at the present time in Rhodesia. The best cuts of beef are being offered by one firm at least at 7d., and of mutton at 9d. Hitherto the people of Bulawayo have had to pay 1s. a pound for meat all round.





---

## TREES FOR SALE.

---

To encourage tree-planting, transplants and seeds of forest trees are supplied by Government, so far as in stock, at the undermentioned rates, exclusive of carriage, from the Government Nursery, Central Experimental Farm, Cedara.

Transplants of Eucalyptus, Pines, Acacias, Casuarinas, Cupressus, etc., about 25 trees in each tin, at 8s. 4d. per 100 trees. Trees in separate tins at 1s. each.

Transplants of scarce kinds, larger trees, or surplus stock, when available will be charged at special rates, which will be furnished on application.

Tree seeds, in variety, at 1s. per packet. Price per pound, which fluctuates, will be furnished on application.

Package and postage of seed, when required, charged 1s. per lb extra.

Orders for present or spring delivery should be addressed to the **Chief Afforestation Officer, Cedara**, and must be accompanied by a remittance in cash or postal order. Cheques cannot be accepted.

---

## PURCHASE OF TREE SEEDS.

---

With a view to the encouragement of seed production in the Colony, offers are invited from persons having locally-grown seed of exotic trees for sale. Not less than one pound will be purchased; and a specimen bearing seed vessels or flowers should be sent for identification purposes. Offers should be made in the first instance to the Forester, Cedara.

---

## SEEDS FOR DISTRIBUTION.

---

Seeds of the following have been secured for distribution to farmers at cost price; —Cotton, Sugar Beet, Tobacco, Rice, Lupins and Field Peas, Italian and Perennial Rye Grass, Paspalum and Cocksfoot. Varieties and prices upon application to the Farm Manager, C.X.F., Cedara.

E. R. SAWER,

Director, Experiment Stations,

Acting Conservator of Forests.

---

## Cows Wanted.

---

WANTED urgently, cows just calved or due to calve. Old animals suitable; any breed.

Apply—P.O. Box 282,  
Pietermaritzburg.

---

## Rules for Agricultural Co-Operative Societies.

---

THE Department of Agriculture has for disposal, at the rate of one shilling each, copies of Model Rules for the use of Agricultural Co-operative Societies. Applications should be made to the Acting Under Secretary for Agriculture, Pietermaritzburg.

### **Bulletins Issued by the Dept. of Agriculture.**

Single copies of such as are still in print may be obtained free (excepting those with price attached) on application to the Acting Under Secretary for Agriculture, Pietermaritzburg.

No.

- 1.—“Notes on Fruit Culture,” by Claude Fuller. [1902]. (*Out of print.*)
- 2.—“Manures on the Natal Market, 1902,” by A. Pardy. [1902].
- 3.—“Insects in an Important Rôle,” by Claude Fuller. [1904]. (*Out of Print.*)
- 4.—“Manures on the Natal Market, 1903,” by A. Pardy. [1903].
- 5.—“Weed Circular,” by Claude Fuller. [1905].
- 6.—“Manures on the Natal Market, 1904,” by A. Pardy. [1904].
- 7.—“Tree-planting in Natal,” by T. R. Sim. [1905]. (*Price 2s. 6d.*)
8. “Agricultural Co-operation,” by E. T. Mullens. [1905]. (*Out of Print.*)
- 9.—“Potato Culture,” by A. N. Pearson [1905]. (*Out of Print.*)
- 10.—“Manures on Natal Market, 1905,” by A. Pardy. [1905].
- “Agricultural Statistics, Natal, 1904-5.” [1906]. (*Out of Print.*)
- 11.—“East Coast Fever,” by S. B. Woollatt. [1906].
- 12.—“Manures on Natal Market, 1906,” by A. Pardy. [1906].
- “Agricultural Statistics, Natal, 1905-6.” [1907].

## **SOUTH AFRICAN STUD BOOK.**

A record of all classes of Stock : the object being to encourage the breeding of thoroughbred stock and to maintain the purity of breeds, thus enhancing their value to the individual owner, and to the country generally.

Applications for Membership and Entries of Stock should be addressed :—

|                          |                                                        |
|--------------------------|--------------------------------------------------------|
| For CAPE COLONY ... ..   | J. PIKE, P.O. Box 703, Cape Town.                      |
| „ TRANSVAAL ... ..       | F. T. NICHOLSON, P.O. Box 134, Pretoria.               |
| „ ORANGE RIVER COLONY... | E. J. MACMILLAN, Government Buildings<br>Bloemfontein. |

## **THE SOUTH AFRICAN STUD BOOK**

IS OBTAINABLE OF :—

T. MASKEW MILLER,  
ADDERLEY STREET,  
CAPETOWN.

**PRICE 10s. 6d.**

J. PIKE,  
SECRETARY, SOUTH AFRICAN STUD BOOK ASSOCIATION.



## **QUIBELL'S LIQUID DIP.**

Thousands of gallons of this is used in the Colony annually.

## **QUIBELL'S POWDER DIP.**

This for several years has been sold in cases of **40 2½ lb.** packets, mixing 1 to 30 gallons water, but to meet the wishes of Farmers regularly using this Dip it will in future be sold in cases containing **48 2½ lb.** packets, mixing, 1st Dipping—1 to 25 gallons water; 2nd Dipping—1 to 50 gallons; thus, while in every way efficient for the eradication of scab, means a considerable saving in the cost of Dipping.

## **QUIBELL'S PASTE CATTLE DIP.**

The popularity of this famous Dip is still maintained. Its reputation for keeping Cattle and Horses in a healthy condition is known to almost every farmer.

## **QUIBELL'S Disinfectant Fluid "KEROL."**

Retains its high standard in germicidal efficiency. One bottle or drum of "Kerol" does the work of 15 bottles or drums of carbolic acid.

*It is used by the South African Governments, Municipalities, Hospitals, etc., and should be used in every Home as a preventive against Infectious Diseases, for General Sanitary Purposes, for Kennels, Poultry, Stables, etc.*

---

## **CHAS. W. HOLMES,**

**202, LONGMARKET STREET, PIETERMARITZBURG.**

SOUTH AFRICAN REPRESENTATIVE—

**QUIBELL BROS., Ltd., Newark (Eng.).**

# LYSAGHT'S CORRUGATED IRON

LOOKS BEST. LASTS LONGEST. COSTS LEAST.

---

LOWEST PRICES FOR

## FENCING MATERIAL.

**Baerecke & Kleudgen,**

BOX 849,

DURBAN

# W. J. BELL,



Nurseryman, . . .

Florist and

. . . Seedsman.

## **FRUIT TREES**

**NOW is the Time to Plant :**

***Apples, Pears, Apricots, Peaches,  
Nectarines, Plums, Medlars,  
Cherries, Almonds, Gooseberries,  
Currants, Persimmons, Walnuts,  
Spanish Chestnuts, Filberts, Figs,  
and Grape Vines.***

Send for Spectal Fruit Tree and Rose Catalogues, Posted Free on Application.

New Season's Vegetable, Flower and Farm Seeds.

Roses, Azaleas, Camellias, Magnolias, Rhododendrons, Ornamental Trees  
and Flowering Shrubs, Creepers, etc.

Bridal and Presentation Bouquets, Wreaths and Cut Flowers.

**195, Church St., Maritzburg**

**Nurseries :** The "Vinery," 431, Loop Street,  
and Town Bush Valley.

Telegraphic Address : "FLORIST."



# BENTLEY & VANDERPUMP'S

## CONDITION

## POWDER.



## PREVENTS

## HORSE

## SICKNESS.

### READ THE FOLLOWING TESTIMONIALS:—

DEAR SIRS,

I have used your Condition Powder and have found it to surpass anything I had tried. My horses felt the benefit of the Powder before many days, and I find that the use of the Powder for a few days from time to time, keeps them in perfect condition and free from disease of every description.

Yours faithfully, EUGENE RENARD.

TO LENNON LIMITED, Durban.

DEAR SIR,

For many years past I have purchased Bentley and Vanderpump's Condition Powders as a Medicine for the Horses and Mules in use at my Brick Fields, and I must say that I cannot estimate the value of the Powders sufficiently, as my stables are always free from sickness, and I have never had any serious outbreak among my stock, which I put down entirely to the regular use of your Powders.

They seem to be the only preventive of Horse Sickness that I know of.

You are at liberty to make what use you like of this letter.

Yours faithfully, J. J. JOHNS

THE BRICK YARDS, UMGENT, DURBAN, NATAL.

September 26th, 1900.

MESSRS. LENNON LIMITED, West Street, Durban.

DEAR SIR,

I have used Bentley & Vanderpump's Horse Condition Powders continuously during the last year, and am fully convinced that they act as a preventive, and I have to thank them for the fact that my horse did not take sickness last season when horses died all round me.

I am never without B. & V. Powders in the stable.

Yours faithfully, H. A. JACOB.

WENTWORTH, NATAL.

September 30th, 1903.

**THIS** Powder should be given to all Horses occasionally; It keeps them in good condition by giving tone to the Stomach and purifying the blood. For Grease, Swelled Legs, Coughs and Influenza, it is the Best Remedy.

The dose is a teaspoonful given every night for a week, in a mash or feed of corn, and the horse can be worked as usual all the time, being in fact more fit

IN TINS AT 2/6, 9/- AND 15/- EACH.

May be obtained from Chemists and Store Keepers throughout S. Africa.

SOLE PROPRIETORS—

## LENNON LIMITED

Cape Town.  
Port Elizabeth.  
Johannesburg.  
East London.  
Durban.

Bulawayo.  
Bloemfontein.  
Graaff Reinet.  
Aliwal North.  
Kimberley.

Beaufort West.  
Oudtshoorn.  
Mafeking.  
Fordsburg.  
Germiston.

Wynberg.  
Paarl.  
Stellenbosch  
and  
London, England

BEWARE OF IMITATIONS.

# PEARL SOAP!

— WHAT IS IT? —

It is JUST THE BEST SOAP for all Household Purposes that can be bought. It is ABSOLUTELY PURE, therefore no INJURY TO THE CLOTHES. It gives a SWEET, FRESH SMELL to the clothes that is absent in other Soaps. It is not the CHEAPEST at the beginning, but, because it lasts longest, IT IS THE CHEAPEST IN THE END.

## PEARL SOAP

— IS —

## NATAL SOAP.

AND PACKED 3 TWIN TABLETS IN CARTON.

If you want to SAVE MONEY, and at the same time

**HELP NATAL ALONG,**

**Ask for Pearl Soap.**

SOLD AT 1s. PER PACKET BY ALL PATRIOTIC GROCERS.

If your Grocer does not stock PEARL SOAP please write to the

MANUFACTURERS

**NATAL SOAP WORKS, LIMITED,  
DURBAN.**

# SUMMER PLANTING,

(SEASON 1907-8).

**MAGNIFICENT STOCK**

—OF—

**Orange, Lemon,** and other  
**Citrus Fruit Trees,**

In all the leading varieties, Guaranteed true to name, and sold in accordance with Government Ordinance for preventing introduction of Insect Pests and Plant Diseases.

TRADE



MARK

Trees delivered free to any Railway Station in South Africa at from **2s.** to **4s.** per tree according to size of tree and quantity ordered.

For full particulars see new Catalogue, sent post free on application to:—

**H. E. V. PICKSTONE & BRO.,**

**P.O. GROOT DRAKENSTEIN, C.C.**



P.O. Box  
21

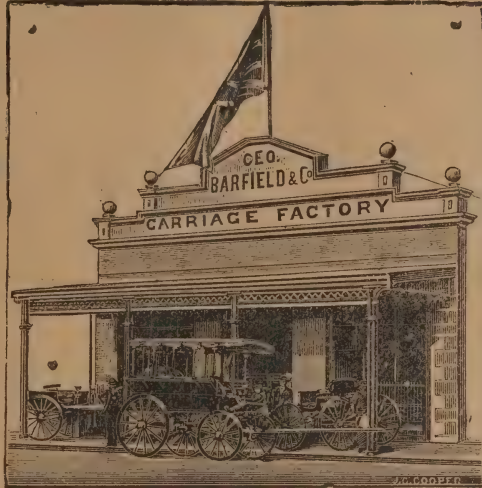
**GEORGE BARFIELD & CO.,**

TELEPHONE  
391

**212, Longmarket Street, Maritzburg.**

**Builders of High-  
Class Vehicles.  
Both for Town  
and  
Country Use.**

**New and Second-  
hand Vehicles al-  
ways on Hand.**



**Estimates given  
for all kinds of  
Carriage Work.**

**Direct Importers.**

**The Trade sup-  
plied at most rea-  
sonable Prices.**

**SAMUEL DEANE,**

**PRODUCE MERCHANT AND CONTRACTOR,**

**296, Longmarket Street, Pietermaritzburg,  
493, West Street, Durban,  
and at Harrismith,**

**HAS ALWAYS ON HAND AND FOR SALE:—**

**Algerian Seed Oats, Tartarian Seed Oats, Cape Seed Oats,  
Medeah Seed Wheat, Cape Forage, Feed Oats, Compressed  
Fodder, Australian Bran, Lucerne, and Kafir Corn. Mixed  
Fowls Food. Glovelly and Sovereign Flours. Rolled Aus-  
tralian Wheat. Boer Meal.**

**Also Regular Importations of SUTTON'S, FRENCH AND OTHER VARIETIES**

**. . SEED POTATOES . .**

**WRITE FOR PARTICULARS TO -**

**Samuel Deane, Maritzburg, Durban, and Harrismith.**

**Telegrams, "SAMDEANE."**

---

NOW READY

---

A Fruit Grower's

HANDBOOK

BY

CLAUDE FULLER.

---

PREPARED FOR THE USE OF FRUIT GROWERS, WITH NUMEROUS  
SELECTED ILLUSTRATIONS.

---

**Price 7s. 6d., including Postage.**

---

THE TIMES PRINTING & PUBLISHING CO., LTD.,

P.O. BOX 204.

*The Times Printing & Publishing Co., Ltd.,*

*P.O. Box 204, Pietermaritzburg.*

*Please send me.....cop.....of the book entitled "A Fruit Grower's  
Handbook," by Mr. Claude Fuller, for which I enclose £      s.      d.*

[Sign here] \_\_\_\_\_

Address \_\_\_\_\_

# ACETYLENE GAS LIGHT.

BRIGHTEST, CHEAPEST, BEST.

# ACETYLENE GAS LIGHT.

FOR PRIVATE RESIDENCES, CHURCHES, PUBLIC BUILDINGS, ETC

# ACETYLENE GAS LIGHT.

UNRIVALLED IN SIMPLICITY, SAFETY AND ECONOMY.



For Free Estimates Write to:—

Large Quantities of

CALCIUM

CARBIDE

Always in Stock.

## L. Hirsch & Co.,

ACETYLENE GAS ENGINEERS.

151, SMITH STREET, DURBAN.

P.O. BOX 518.

# REID & ACUTT'S WOOL MART, Ltd.

MONA ROAD AND ESPLANADE, DURBAN.

## WOOL SALES.

Sales of Wool, Mohair, Hides, Skins, Horns, Wattle Bark, &c.,

**HELD EVERY WEDNESDAY, AT 12 NOON,**

And Special Sales when necessary.

**Liberal Advances made on Produce. Prompt Settlements.**

## REID & ACUTT'S WOOL MART, Ltd.

MANAGING DIRECTOR - - SIDNEY A. GREEN.

Telegrams: "Woolpack."  
P.O. Box 705.

WM. P. ANDERSON,  
Secretary.



# THE IRON, CONCRETE & ASBESTOS

MFG. COY., LTD.

(The I.C.A. MFG. COY., LTD.),

—FORMERLY—

## The HOLLOW BLOCK SYNDICATE, Ltd.,

P.O. Box 948.

Cablegrams | "CONCRETE."  
Telegrams |

A B C Code Used, 5th Edition.

OFFICE:  
IMPERIAL BUILDINGS, GARDINER STREET,  
**DURBAN.**

WORKS:  
**WENTWORTH.**

### DEPARTMENTS

#### - - IRON - -

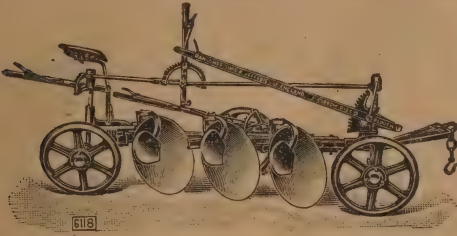
ENGINEERS, IRON AND BRASS FOUNDERS.  
MAKERS OF HOLLOW BLOCK MACHINERY, Etc.

#### - - CONCRETE - -

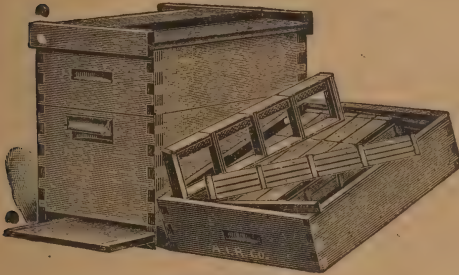
MANUFACTURERS OF PATENT HOLLOW CONCRETE  
BUILDING BLOCKS.  
REINFORCED CONCRETE FLOWER POTS, FEEDING  
TROUGHES, FENCING POSTS, Etc.

#### - - ASBESTOS - -

MANUFACTURERS OF ASBESTOS SLATE FOR ROOF-  
ING, CEILINGS, WALLS AND PARTITIONS.  
ASBESTOS MILLBOARD, Etc.



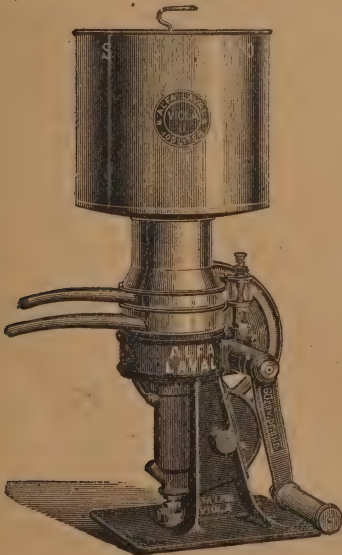
PLOW.



BEE HIVE.



CALF FEEDER.



CREAM SEPARATOR

## Steel Murray & Co.,

PIETERMARITZBURG.

GROCERIES . . .

. . . **HARDWARE**

Oils, Paints, Tar.

Low-down Farm **WAGGONS.**

Wire Fencing and Gates.

**CREAM SEPARATORS,**

*Sole Agents for the*  
**ALFA LAVAL CREAM SEPARATOR.**

Dairy Utensils,

Railroad **MILK CANS,**

Calf **WEANERS & FEEDERS.**

Agricultural

**IMPLEMENTS**

and Machinery.

*Sole Agents for*  
**RANSOMES, SIMS & JEFFERIES.**

**PLOWS, HARROWS,**

**ROLLERS, FERTILIZERS,**

and **DISTRIBUTORS.**

Mealie **PLANTERS,**

Seed **SOWERS.**

**SCUFFLERS,** Weeders.

**MOWERS,** Reapers,

**HAY RAKES,**

Hay and Forage **PRESSES.**

DAY, SON & HEWIT'S

**FARM MEDICINES,**

Sheep **DIPS.**

**BEE HIVES** and Accessories,

**INCUBATORS,**

and Poultry Medicines.

Farm and Garden **SEEDS.**

*Illustrations and Prices*  
*on Application.*

# ULLMANN BROTHERS,

THE

PRODUCE COMMISSION AGENTS,

JOHANNESBURG.

P.O. Box 3305.

Telegraphic Address: "Ulna."

OFFICE AND STORES—7. MARSHALL SQUARE (near Charge Office).

WILL SELL all kinds of Produce, as well as Live Stock, at Highest Market Prices, against Commission. All Sales are personally supervised by us, so we can guarantee perfect satisfaction. Prompt Settlement.

All other Agency Business Done. Correspondence Invited.

Our Market Report is to be found in another Column.

## BOOKS FOR FARMERS.

|                                                                                                                                        | £  | s. | d. | Post free |
|----------------------------------------------------------------------------------------------------------------------------------------|----|----|----|-----------|
| <i>Cyclopædia of American Horticulture</i> , comprising directions for the Cultivation of Crops of all Species of Fruits (4 vols.) ... | 5  | 0  | 0  | 5 10 0    |
| <i>Book of the Farm</i> , by Stephens (3 vols.) ...                                                                                    | 3  | 5  | 0  | 3 10 0    |
| <i>The Complete Grazier—Farmers' and Cattle Breeders' Assistant</i> ...                                                                | 1  | 12 | 6  | 1 15 0    |
| <i>Cyclopædia of American Agriculture</i> (4 vols.), vols. 1 and 2 just ready ...                                                      | 1  | 3  | 0  | 1 7 0     |
| <i>The Farm Live Stock of Great Britain</i> , by Robert Wallace ...                                                                    | 1  | 0  | 0  | 1 1 0     |
| <i>The Complete Modern Farrier—A Compendium of Veterinary Science and Practice</i> , by Brown ...                                      | 10 | 6  |    | 11 0      |
| <i>Feeding Farm Animals</i> , by T. Shaw ...                                                                                           | 12 | 6  |    | 13 0      |
| <i>Sheep and their Diseases</i> , by W. W. Rushworth ...                                                                               | 7  | 6  |    | 8 6       |
| <i>A Book of Alfalfa—Its History, Cultivation, etc.</i> , by F. D. Coburn ...                                                          | 10 | 6  |    | 11 6      |
| <i>Alfalfa—Its Growth, Uses, etc.</i> ...                                                                                              | 3  | 6  |    | 4 0       |
| <i>A Text Book of Tropical Agriculture</i> , by H. A. Nicholls ...                                                                     | 6  | 0  |    | 6 9       |
| <i>The American Fruit Culturist</i> , by J. J. Thomas ...                                                                              | 15 | 0  |    | 16 0      |
| <i>A Manual of Modern Viti-Culture</i> , by G. Foex ...                                                                                | 3  | 6  |    | 4 0       |
| <i>The Farmers' and Fruit-Growers' Guide</i> , compiled by W. H. Clark ...                                                             | 12 | 6  |    | 13 6      |
| <i>Citrus Fruits and their Culture</i> , by H. Hume ...                                                                                | 15 | 0  |    | 16 0      |
| <i>Californian Fruits and How to Grow them</i> , by E. J. Wickson ...                                                                  | 15 | 0  |    | 16 0      |
| <i>Plums and Plum Culture</i> , by F. A. Waugh ...                                                                                     | 7  | 6  |    | 8 3       |
| <i>Book of the Pig</i> , by J. Long ...                                                                                                | 10 | 6  |    | 12 0      |
| <i>The Feeding of Animals</i> , by W. H. Jordan ...                                                                                    | 6  | 0  |    | 6 9       |
| <i>Animal Breeding</i> , by T. Shaw ...                                                                                                | 7  | 6  |    | 8 6       |
| <i>The Dairyman's Manual: A Practical Treatise for the Dairy</i> ...                                                                   | 7  | 6  |    | 8 0       |
| <i>Tobacco: A Hand-book for Planters, etc.</i> , by C. G. W. Lock ...                                                                  | 6  | 0  |    | 6 9       |
| <i>Tobacco Leaf—Its Culture and Cure</i> , by Killebrew and Myrick ...                                                                 | 12 | 6  |    | 13 6      |
| <i>Coffee—Its Culture and Commerce</i> , by C. G. W. Lock ...                                                                          | 12 | 6  |    | 13 6      |
| <i>Irrigation Farming: A Hand-book for the Proper Application of Water in the Production of Crops</i> , by L. M. Wilcox ...            | 10 | 0  |    | 11 0      |
| <i>Irrigation</i> , with Surface and Subterranean Waters and Land Drainage, by W. G. Cox ...                                           | 6  | 0  |    | 6 9       |
| <i>The Fertility of the Land</i> , by J. P. Roberts ...                                                                                | 6  | 0  |    | 6 9       |

COMPLETE CATALOGUES POST FREE ON APPLICATION.

**T. MASKEW MILLER, Adderley Street, Capetown.**

P.O. BOX 396.

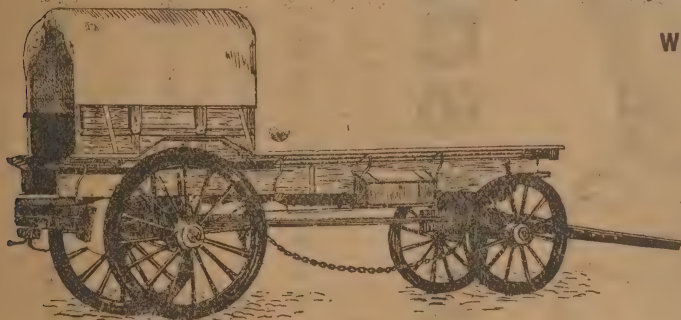


# J. MERRYWEATHER & SONS, Wagonmakers, Blacksmiths, &c.,

Supply Wagons of every description on Shortest Notice and at Low Prices; Workmanship and Material Guaranteed. Tip Carts, Light Delivery Carts; also Light Spring Carts suitable for Farmers and Dairymen.

**TROLLEYS, both Heavy and Light.**

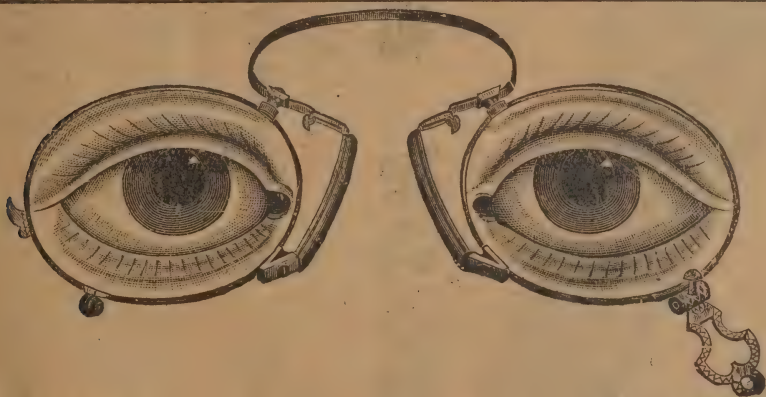
**WHEELBARROWS.**



All Sizes of Wheels  
in Stock or Made  
to Order.

Sneezewood, Stinkwood, Stinkwood Shafts Sawn or Bent to Shape, Forgings, either for Ploughs, Wagons, or Mowing Machines.

**352, CHURCH STREET, PIETERMARITZBURG.**



**FARMERS and COUNTRY RESIDENTS**

— Who find their —

**EYESIGHT A TROUBLE,**

*Should make an Appointment with us BY POST.*

CONSULTING HOURS—Mornings, 10 to 1. Afternoons, 3 to 5.

**ELGIE & EMERSON,** *EYE SIGHT-TESTING OPTICIANS,*  
F.S.M.C. LOND. (BY EXAM.), 49, Gardiner Street, Durban.

Per 100  
s. d

|                                                 |             |
|-------------------------------------------------|-------------|
| <b>Best Smoke-<br/>less Shot<br/>Cartridges</b> | <b>13 6</b> |
| <b>Martini</b>                                  | <b>13 6</b> |
| <b>Lee Enfield</b>                              | <b>17 6</b> |
| <b>Mauser<br/>Breechloaders<br/>from £5.</b>    | <b>17 6</b> |



# **HILLSDON & HILLSDON,**

## **FAR - KILLING GUN AND RIFLE MANUFACTURERS,**

### **LONDON, BIRMINGHAM & SOUTH AFRICA.**

**Capetown Depot: The ARMOURIES, 45, Burg Street.**

**F**IREARMS bearing the name of **HILLSDON** are an emblem of soundest type of Gun Construction, and the principal features are **stability, Simplicity, Strength, and Tremendous Killing Powers.**

Send for Illustrated Catalogue.

All New Guns and Rifles delivered Carriage and Duty Free

---

---

# FERTILISERS.

---

---

WE ARE NOW BOOKING ORDERS FOR—

**SUPERPHOSPHATE,** ALL GRADES,

**BASIC SLAG,**

**BONE MEAL,**

**POTATO MANURE,** SPECIAL,

**POTATO MANURE** FARMER'S,

**MIXED MANURES** OF ALL KINDS,

**NITRATE OF SODA,**

**MURIATE OF POTASH,**

**AND ALL OTHER MANURES.**

---

---

ALL OF THE BEST QUALITY AND WITH A GUARANTEED ANALYSIS.

---

---

WRITE FOR PRICE LIST.

---

---

**P. HENWOOD, SON, SOUTTER & CO.,**  
**DURBAN**



# ODAMS' Fertilizers

QUALITY UNIFORM, AND ANALYSIS GUARANTEED.

**ODAMS' "Complete" Fertilizer** for Potatoes, Forage, and General Use.—It contains the elements necessary for vigorous and healthy plant life. Where the crops are entirely removed from the land, and nothing, or but little returned to it except in the form of cattle manure or decomposed vegetable refuse, a moderate application of ODAMS' COMPLETE FERTILIZER is calculated to maintain the soil in a state of fertility, and restore to productiveness soils exhausted by continuous cropping. This Manure for Potatoes is calculated to procure a PROLIFIC YIELD of Large Sound Tubers, without the assistance of Kraal Manure. ENORMOUS YIELDS HAVE BEEN RAISED by the aid of ODAMS' "COMPLETE" FERTILIZERS on Potatoes. It is the most economical Manure in use.

## ANALYSIS—

|                    |                        |
|--------------------|------------------------|
| 18 to 20 per cent. | of Soluble Phosphate.  |
| 5 to 7             | Undissolved Phosphate. |
| 4 to 5             | Ammonia.               |
| 2 to 3             | Pure Potash.           |

# ODAMS' Vitriolized Bones

(PURE DISSOLVED BONES).

Vitriolized Bones are very lasting in their effects, and greatly improve the productiveness of the land, being rich in undissolved Bone, Phosphates, and Ammonia. By the treatment the Bone is only partly dissolved, but all is in a softened state, suitable for the continuous nourishment and rapid growth of the plant. Bone thus Vitriolised will be found to give great permanence of fertility in all varieties of soils—and far superior results than Bone Dust on Mealies.

## ANALYSIS—

|                        |                    |
|------------------------|--------------------|
| 32 to 35 per cent.     | Total Phosphates.  |
| 12 to 16               | Soluble            |
| 2.47 to 2.66 per cent. | Nitrogen equal to  |
| 3 to 3                 | per cent. Ammonia. |

Large Shipments of the above Fertilizers are now due to arrive, in time for the coming season, and large repeat orders from leading Natal Farmers have already been placed for delivery on arrival.

In the present state of Railway Traffic, it is very necessary that orders should be placed early to ensure despatch in time.

PRICE AND FULL PARTICULARS—

**W. DUNN & CO., DURBAN,**  
**AGENTS,**

**ODAMS' MANURE & CHEMICAL Co., LIMITED.**

BY SPECIAL  
APPOINTMENT TO



HIS EXCELLENCY  
SIR HENRY MCCALLUM,  
K.C.M.G.

# M'CRYSTAL & HARKNESS,

**Saddlers and Harness Makers,**  
186, CHURCH STREET, PIETERMARITZBURG.

Postal  
Address :  
P.O. 176,  
Maritz-  
burg.

## FARMERS, STUDY YOUR INTERESTS

By Buying Sound and Reliable Goods.

- - THIS CAN BE DONE - -

By placing your orders with

Tele-  
graphic  
Address  
Saddlery,  
Maritz-  
burg

**LYLE BROTHERS,** Saddlers Harness,  
and Bag Makers.  
**246, Church Street, Maritzburg.**

Whose endeavour has always been to give the best value at lowest possible prices consistent with quality  
Harness and Saddlery of every description made to order. Large Stocks on Hand.

**REPAIRS EXECUTED WITH NEATNESS AND DISPATCH.**

Branches—LADYSMITH. DUNDEE, AND VRYHEID

## VETERINARY PAPERS FOR FARMERS,

—PUBLISHED BY—

The "Times" P. & P. Co., Ltd.,  
222, Church Street, and Chancery Lane, Maritzburg.

BUTTER MAKING. ABORTION IN COWS.

LIVER ROT AND BRAXY.

WOUNDS AND CASTRATION.

LAMENESS AND HEREDITARY

PREDISPOSITION IN HORSES.

CURE OF HORSES' LEGS AND FEET.

ANTHRAX.

TUBERCULOSIS.

PARASITIC BRONCHITIS IN SHEEP.

By Professor Wortley Axe.

**Price 1s., Post, 1s. 1d.**

---

# HAYNE & CO.,

---

**GENERAL BUYERS OF NATAL PRODUCE.**

---

**Mealies, Kafir Corn, Wattle Bark,  
Mineprops, etc. etc.. . . . .**

---

— ADDRESS —

**72 & 74, COMMERCIAL ROAD, DURBAN.**

— ALSO AT —

**8, HARRISON STREET, JOHANNESBURG.**

---

**REUBEN BENINGFIELD & SON.**

(ESTABLISHED 1844).

*Auctioneers, Valuers, and Appraisers,*

LAND, PRODUCE, ESTATE, and GENERAL COMMISSION AGENTS,

REGULAR SALES OF LIVE STOCK AND MERCHANDISE EVERY SATURDAY.

**LAND SALES: MONTHLY. PRIVATE SALES INLAND DAILY.**

SALES UNDERTAKEN IN ANY PART OF THE COLONY.

---

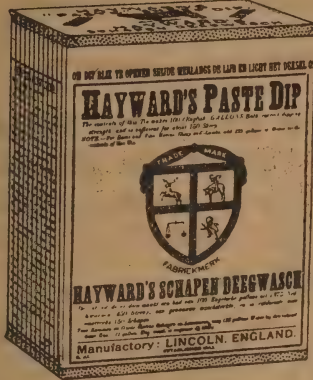
**ROYAL MART,**

*Gardiner Street, Durban.*

**REUBEN BENINGFIELD & SON.**



# HAYWARD'S



A case of HAYWARD'S SULPHUR PASTE, containing 10 air-tight Tins, is sufficient to make 1,200 gallons scab strength or 800 gallons tick strength.

## OUTSTANDING MERITS—

**EFFECTIVE.  
SAFE.  
ECONOMICAL.  
EASILY SOLUBLE.**

No dip in South Africa has given better results over a long period of years.

**Hayward's Fluid**  
(In 1 gallon drums).

The most reliable non-poisonous dip

# SULPHUR PASTE

**Steel Murray & Coy.,  
P.M.BURG & DURBAN.**

**Hayward, Young & Coy.,  
PORT ELIZABETH.**

# HUNT, LEUCHARS & HEPBURN, LTD.,

**TIMBER MERCHANTS, . . . DURBAN.**

**Large Stocks of TIMBER, GALVANISED IRON and all  
BUILDING REQUISITES.**

**Estimates given for Wood and Iron Buildings of Every Description and All  
Classes of Joinery Work.**

**GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.**

**P.O. Box 455.**

**Telegraphic Address: "HUNT"**

**And at JOHANNESBURG.**

## CONSTANT REPEAT ORDERS.

### Pioneer Mealie Meal Beats all Others.

A Delicious Breakfast Food. Clean, Wholesome,  
Nutritious. "Try It."

In Truck Loads or Small Consignments.

LARGE  
DEMAND for

'Nigger Meal,'

In eight-wheeler lots.

### Cattle Feed.

Mealies Ground on the Cob,  
suitable for all Animal stomachs.

### CRUSHED MEALIES

And all other Mill Manufactures in Stock.

Now Stocking Colonial Manufactures. Patronise your own Colony's Efforts.

At "The Pioneer" Mills, Newcastle

**WILLIAM BEARDALL**

WILL ALWAYS  
WELCOME YOU.

Telephone 85.

P.O. Box 102.

Telegrams: BEARDALL, 'NEWCASTLE.'

OVER 24,000 BAGS SOLD IN 1906.

### Boer Meal or Whole Wheaten Meal.

FROM THE FINEST WHEATS.

Rolled Wheat, Rolled Oats,  
Seed Oats, Flour Barley,  
Forage Hay,  
Compressed Fodder,  
Sugar Salt, Flower  
and Field Seeds,  
and Other  
Lines.

## Agricultural Pests

... WITH ...

## ... METHODS OF PREVENTION,

... BY ...

### MISS E. A. ORMEROD,

Late Consulting Entomologist to the Royal  
Agricultural Society (of England).

**Price 1s. By Post, 1s. 1d.**

**The Times P. & P. Co., Ltd., Maritzburg.**

---

TO SOUTH AFRICAN FARMERS, SHEEP BREEDERS AND BUTCHERS.

---

A Common Disease of Sheep in South Africa which is often  
the cause of serious loss both to the breeder and the butcher.

---

## ***Nodular Disease***

### ***of the***

## ***Intestines in Sheep.***

---

ITS NATURE, AND HOW IT MAY BE PREVENTED.

**By Dr. Watkins-Pitchford, M.D.**

(Assistant Government Bacteriologist, Natal).

---

**PRICE : ONE SHILLING.**

**Post Free to any Address in South Africa, 1s. 2d.**

---

— FROM THE —

**‘Times’ Printing & Publishing Co., Ltd., Maritzburg.**

---

A DISEASE which is quite common in sheep throughout the whole of South Africa, but which does not appear to have been hitherto recognised and described. It occasionally causes great mortality in a flock, and is one of the reasons why Sheep cannot be satisfactorily raised in some localities.

Butchers and Breeders in South Africa have long been familiar with the appearance, in the intestines of slaughtered sheep, of little lumps of what they believe to be sand or flint embedded in the gut. In some parts of the country every sheep slaughtered is found to have these deposits, in greater or less numbers, in the intestines. When they are present even in small number the gut is quite unfit for the making of sausage skins; when they are present in large numbers the flesh of the animal is found to be so poor as to be hardly saleable.

In this pamphlet, which is illustrated by photographs, the exact nature of the disease is clearly described, how it is contracted and how it may be prevented.

A knowledge of the true nature of the disease is of great importance both to those who raise Sheep for the meat market and to Butchers.



# MOLASSINE

# MEAL

***For  
Stock  
of all  
kinds.***

**Unsurpassed by any other  
Food Condiment.**

EVERY PROGRESSIVE FARMER KNOWS  
ITS VALUE AND USES IT.



**TRY IT** on any animal in low condition and  
CONVINCE YOURSELVES.

Packed in 100 lb. Bags and stocked by all Produce  
Dealers.

*RAILAGE AT S.A.P. RATES.*

For Pamphlets, etc., apply to—

**The MOLASSINE CO. (South Africa),  
LIMITED,**

**BOX 400, DURBAN.**

***Factory : MOUNT EDGECOMBE.***



**THE FOOD**

for HORSES, MULES, COWS, SHEEP,  
PIGS, DOGS, and POULTRY.

# **FENCING MATERIAL**

Large Stocks of Barbed and Plain Wire  
Standards and Straining Posts.

## **— GATES, —**

Cyclone Droppers (or Pickets) and Loops  
in Stock or Made to Order.

Also Cyclone Patent Lever Gate.

## **CYCLONE GATE & FENCE CO., LTD.,**

315, CHURCH STREET (Opposite Market Square).

Telegrams—"CYCLONE."

BOX 289.

P.O. BOX 879.

Telegraphic Address: MILLING, DURBAN.

## **The Natal Mill Elevator Co.**

Bankers: The Natal Bank, Ltd.

Mills: UMBILO.

Offices: 319, SMITH STREET, DURBAN.

—WE ARE—

## **BUYERS OF MEALIES AND WHEAT**

—IN ANY QUANTITY—

\* FOR CASH. \*

# GENUINE BREECHLOADING SHOT GUNS, MAUSER, MANN- LICKER, LEE ENFIELD, FALLING BLOCK AND OTHER RIFLES.

Our new patterns for  
the coming season are  
now ready and  
prices are re-  
duced.

Immediate deliveries. Carriage and Duty paid.  
Send for our beautifully illustrated General  
Catalogue of 72 pages.

Reliable Agents  
Wanted.



... Note the Address ...

**HILLSDON & HILLSDON, LTD., COLONIAL GUN WORKS  
BIRMINGHAM.**

N.B.—We take this opportunity of advising our customers that Messrs. Smith & Co., trading in Burg Street, Cape Town, as  
Hillsdon & Hillsdon, are no way connected with our Firm, and have no authority to take orders or collect moneys on our  
behalf; it is with regret, but in the interest of our business that we find it necessary to insert this notice.



# Jeyes' Disinfectants

ARE THE ONLY DISINFECTANTS USED IN THE  
ROYAL HOUSEHOLD, STABLES & KENNELS . .

**RELIABLE AND SAFE IN USE.**



**Jeyes'** . . .

**Cyllin** . . .

The strongest Fluid Disinfectant known to science: 15 time stronger than Carbolic Acid, but harmless to Human Life.

A written guarantee of efficiency can be given.

*Can be used for Poultry, Horses, Cattle, etc., etc.*

THE CHEAPEST AND MOST EFFICIENT  
DISINFECTANT ON THE MARKET

**JEYES' DIP:** IS USED WITH GREAT SUCCESS  
(FLUID.) ALL OVER THE WORLD.

**PARTICULARS FROM:—**

**FENWICK & CO.,**  
Club Arcade, DURBAN.



SPRAYING OXEN WITH CREOLIN AGAINST FLIES.

## Contagious Maladies

Are Successfully Resisted by

**STEPHAN'S "FIX."**

Best Whitewashing, Disinfecting,

—AND—

Taring Machine.

**ABSOLUTELY NECESSARY  
FOR STOCK-FARMER . .**

**Best protection against the  
flies of the cattle.**

Ask for prospectus at the administration of  
this Journal.

AGENTS ARE DESIRED.

Manufacturer:

**Stephan, at Scharley, GERMANY.**

# PERIODICALS . .

**Relating to . . FARMING AND AGRICULTURE.**

# 1908

To avoid disappointment in receiving your Newspapers and Magazines promptly,  
place your order **AT ONCE**. Get a Copy of **OUR LIST** and **SAVE MONEY**.

**LISTS SENT FREE ON APPLICATION.**

—THE—

**"Times" Printing and Publishing Co., Ltd.,**

**222, Church Street, and Chancery Lane, Pietermaritzburg.**

# OHLENDORFF'S FERTILIZERS.

ANALYSES GUARANTEED.

*Specially prepared for South African Soils and following crops:—*

**POTATOES**

**TOBACCO**

**GRAIN & MEALIES**

**VINES**

**ROOTS**

**SUGAR CANE**

**SUPERPHOSPHATE—Basic Slag (all grades).**

**BONE MEAL—Vitriolized Bones, etc.**

— ALSO —

**OHLENDORFF'S STERILIZED BONE MEAL & FLOUR.**

FOR ALL PARTICULARS APPLY TO:—

**T. BURMAN, 99, Grey Street, DURBAN**

**Telephone No. 499.**

**Tel. Address: "MEAL."**

**Postal Address: Box 822.**

## G. H. O'MEARA & CO.

**Millers, Corn Factors, Produce Merchants  
and Commission Agents.**

**FOX & VON WEILLIGH STREETS,  
JOHANNESBURG.**

**WILL BUY DIRECT FROM THE FARMERS IN ANY  
QUANTITIES FOR CASH.**



# **The Corn Exchange.** (ESTABLISHED 1868.)

## **R. MASON & SON,**

**289, CHURCH STREET, PIETERMARITZBURG,  
MILLERS,**

**Grain, Produce, and Seeds Merchants.**

**SPECIAL.**—Boer Meal, Crushed Wheat and Rolled Wheat (Kühne System).

**PIGEON FOODS**—Maple Peas, Hemp, &c., &c. Poultry and Chicken Mixtures. Thorley's Ovum.

**HORSE-FOOD.**—Rolled Oats, Wheaten Bran, Crushed Mealies, Molassine Meal, Rock Salt, Chaffed Forage and Lucerne, &c., &c., also Cow Meal.

**FARMERS' AGENCY.**—Consignments of Produce of all kinds realised to best advantages. Account Sales prompt with remittances.

## **SEEDS! SEEDS!!**

We hold Prime Fresh Stocks of:—

**Mangel Wurzel, Swedes, Turnips, Sugar Beet,  
Paspalum, Italian and Perennial Ryegrass,  
Provence Lucerne, Rape (Dwarf Essex), Thousand  
Headed Kale, Cow Peas, Black Wattle,  
etc., etc.**

For description, mode of cultivation and prices, see our New Catalogue (free on application).

## **R. MASON & SON,**

**THE CORN EXCHANGE SEEDS DEPARTMENT,**

**289, Church Street, Maritzburg.**

# STEWARTS AND LLOYDS (SOUTH AFRICA) LTD.,

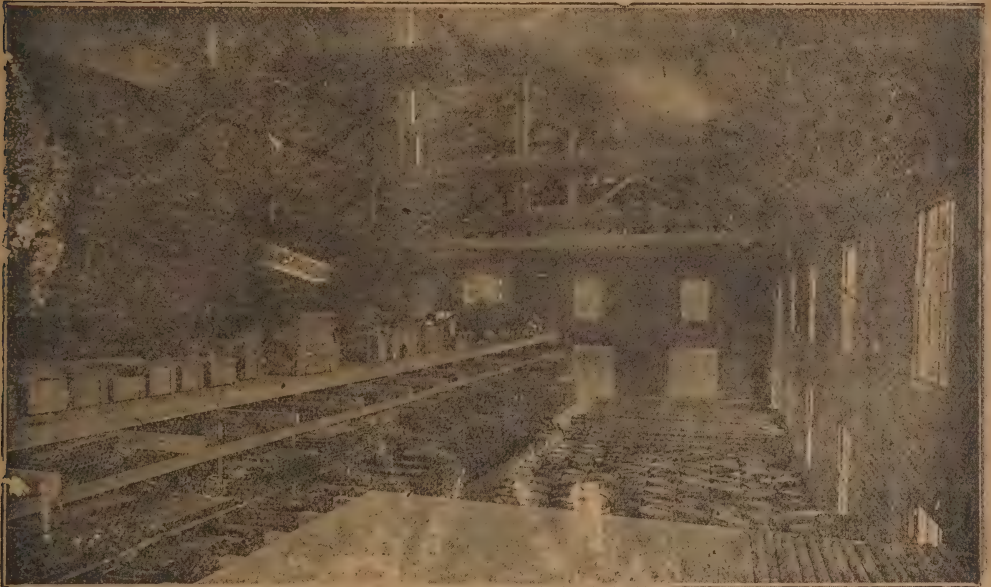
MANUFACTURERS OF WROUGHT IRON

## TUBES AND FITTINGS

FOR GAS, STEAM, AIR, AND WATER.

**BOILER TUBES.**

**WELL TUBES.**



DURBAN STORE.

Large Stocks held in Durban and Maritzburg of all Sizes  
from  $\frac{1}{4}$  in to 12 in. English and American Thread.

**BOILER TUBES** from 2 in. to 4 in.

**All Classes of Valves and Cocks Stocked.**

**Durban Office: 310a, SMITH STREET.**

P.O. BOX 131.

Stores: **SMITH STREET.**  
**MILNE STREET.**

Telephone No. 352.

Tele. Add.: "TUBES," Durban and  
Pietermaritzburg.

Maritzburg Stores and Offices **McCALLUM STREET.**

# J. A. PETERS,

## Forage & Corn Merchant,

### Army Contractor,

## 184, Commercial Road,

## MARITZBURG,

Has for Sale at Lowest Rates:—

|             |                                                                                                     |              |
|-------------|-----------------------------------------------------------------------------------------------------|--------------|
|             | French Early Rose Seed Potatoes<br>(just arrived).                                                  |              |
| RACE-       | Algerian Seed Oats (reputed rust-<br>resisting).                                                    | SPECIALITIES |
| HORSE       | Lucerne Seed.                                                                                       | IN           |
| FOOD        | Compressed Fodder (American and<br>Australian), Lucerne, Australian<br>and American Bran, Oil Cake. | HORSE BEANS  |
| A           | Best Whole and Rolled Feed Oats.                                                                    | AND          |
|             | Pigeon Peas, Fowls' Food, Oyster<br>Shell.                                                          | PIGEONS'     |
| SPECIALITY. | Coolie Rice, Dholl.                                                                                 | PEAS.        |
|             | Training and Ordinary Feed Forage<br>always on hand, and all kinds of<br>Produce.                   |              |

**COLONIAL PRODUCE BOUGHT AND DELIVERY TAKEN  
AT ANY RAILWAY STATION.**

Postal Address : P.O. BOX 197

Telegrams : "PETERS."



TO FARMERS. . . .

## *The "Times of Natal."*

### **SPECIAL NEW SCALE**

FOR

### **SMALL PREPAID ADVERTISEMENTS**

IN

### **PEOPLE'S COLUMNS.**

*A MOST POPULAR AND EFFECTIVE METHOD OF ADVERTISING.*

The "Times of Natal." with a view of still further popularising the paper as a medium for the insertion of "Small" Advertisements, have arranged a REVISED SCALE OF CHARGES for this class of advertisements.

Special Headings are given to "LIVE STOCK," "PRODUCE," etc., and thus Farmers' announcements enjoy a particular prominence,

*This Scale only applies to advertisements accompanied by remittance. Advertisements of this class, which are not prepaid, will be charged at a higher rate.*

### **SCALE OF CHARGES.**

| NUMBER OF WORDS.          | NUMBER OF INSERTIONS. |        |         |                   |
|---------------------------|-----------------------|--------|---------|-------------------|
|                           | One.                  | Three. | Six.    | Over Six.         |
| 20                        | 1s.                   | 2s.    | 3s.     | 6d. per insertion |
| 30                        | 1s. 6d.               | 3s.    | 4s. 6d. | 9d. ..            |
| 40                        | 2s.                   | 4s.    | 6s.     | 1s. ..            |
| 50                        | 2s. 6d.               | 5s.    | 7s. 6d. | 1s. 3d. ..        |
| Every additional 10 Words | 6d.                   | 1s.    | 1s. 6d. | 3d. ..            |

## **Stud, Stock, and Farm.**

**RATES OF CHARGES.**—20 words for 3 months, 3s. 30 words for 3 months 4s. 6d. 40 words for 3 months, 6s. Intending advertisers are requested to communicate with the Publishers direct.

### **STUD.**

**P. D. KIMBER, MARITZDAAL, THE DARGLE.**—Breeder of P. Yorkshire Coach Horses, Cleveland Bays, Hackneys, and Pure-Breed Shetlands. Stallions, Mares, Young Stock, Saddle Horses, Remounts and Well-Matched Pairs always on sale. Young Horses selected privately trained to saddle or harness to suit purchasers. Also Breeder of Shorthorn Cattle.

**WILLIAM WOOD, "WOODFIELD" STUD FARM, NOTTINGHAM ROAD.**—Breeder of Pedigree and Grade South Devon Cattle (heavy milking strain). Milk register kept. Young Bulls for sale. Also Shropshire Down Sheep (prizes won last season included a championship, open to all breeds).

### **STOCK.**

**PURE-BRED MIDDLE WHITE YORKSHIRE PIGS** for Sale; Boars and Yelts; always on hand.—**C. HINGESTON, Sutherlands P.O., near Maritzburg.**

**PEDIGREE** large Yorkshire and Tamworth Pigs, also some half-breeds.—**Messrs. MILLER & STEPHENS, Tafira, Batstones P.O.**

### **SITUATION WANTED.**

**A GERMAN**, aged 20 years, grown up on a Natal Farm, seeks situation on an English Farm in Natal. State conditions, etc., to—**O. STEGEN, P.O. Elands-kraal, Umsinga.**

---

**NOW READY.**

**RULES**  
FOR THE  
**COURTS OF MAGISTRATES**  
IN THE COLONY OF NATAL.

To come into operation on DECEMBER 1st, 1906

Framed under Act 22, 1896,

**AND OTHER AMENDING ACTS,**

WITH

**The Magistrates' Courts Act**  
(22, 1896).

**AND OTHER ACTS AMENDING SAME.**

NOTED, AND WITH FULL INDEX, AND INTERLEAVED FOR NOTING  
BOUND PAPER BOARDS WITH LEATHER BACK.

COPYRIGHT.

---

**Price 7s. 6d., or Post Free, 8s.**

---

**The 'Times' Printing & Publishing Co., Ltd.,**

222, Church Street, and Chancery Lane, Pietermaritzburg.



# The Wattle Extract Co.

16 & 17, ANGLO-AFRICAN HOUSE,  
SMITH STREET, DURBAN.

—BUYERS OF—

## WATTLE BARK.

IN ANY QUANTITY. PROMPT SETTLEMENTS ON RECEIPT OF GOODS.

HIGHEST PRICES GIVEN. NO COMMISSION CHARGED.

- - CORRESPONDENCE INVITED - -

I.O. Box 734.

Telegrams: "ATLANTIC."



## Index to Advertisements.

---

|                                                 | PAGE.    |
|-------------------------------------------------|----------|
| Agricultural Pests, etc,                        | 20       |
| Baerecke & Kleudgen                             | 2        |
| Barfield, George, & Co.                         | 7        |
| Beardall, William                               | 20       |
| Bell, W. J.                                     | 3        |
| Beningfield, Ruben, & Son                       | 18       |
| Cooper, Wm., & Nephews                          | viii.    |
| Cotts, Wm., & Co.                               | v., vi., |
| Cyclone Gate & Fence Co., Ltd.                  | 23       |
| Deane, Samuel                                   | 7        |
| Dunn, W., & Co.                                 | 16       |
| Elgie & Emerson                                 | 13       |
| Fenwick & Co.                                   | 25       |
| Fruit Grower's Handbook                         | 8        |
| Hayne & Co.                                     | 18       |
| Hayward, Young & Co.                            | 19       |
| Henwood, Son, Soutter & Co.                     | 15       |
| Hillsdon & Hillsdon                             | 14       |
| Hillsdon & Hillsdon                             | 24       |
| Hingeston, C.                                   | 32       |
| Hirsch, L., & Co.                               | 9        |
| Holmes, Chas. W.                                | 1        |
| Hunt, Leuchars & Hepburn, Ltd                   | 19       |
| Iron, Concrete and Asbestos Mfg. Co., Ltd., The | 10       |
| Kimber, P. D.                                   | 32       |

# INDEX TO ADVERTISEMENTS.

|                                            | PAGE.                 |
|--------------------------------------------|-----------------------|
| Little's                                   | 34                    |
| Lennon, Ltd.                               | 4                     |
| Lyle Brothers.                             | 17                    |
| Malcomess & Co., Ltd.                      | (Cover—back, inside)  |
| Mason & Son                                | 28                    |
| McCrystal & Harkness                       | 17                    |
| Merryweather, J., & Sons                   | 13                    |
| Miller, J. Maskew                          | 12                    |
| Miller & Stephens                          | 32                    |
| Molassine Co., Ltd., The                   | 22                    |
| Morrisse, Hubert, & Co.                    | ii.                   |
| Natal Direct Line                          | iv.                   |
| Natal Mill Elevator Co., The               | 23                    |
| Natal Soap Works, Ltd.                     | 5                     |
| Nodular Disease of the Intestines in Sheep | 21                    |
| North, G., & Son                           | vii.                  |
| Ohlendorff's                               | 27                    |
| O'Meara, G. H., & Co.                      | 27                    |
| Periodicals                                | 26                    |
| Peters, J. A.                              | 30                    |
| Pickstone, H. E. V., & Bro.                | 6                     |
| Raw, J., & Co.                             | iii.                  |
| Reid & Acutt's Wool Mart, Ltd.             | 9                     |
| Simmons, P. D.                             | (Cover—back, outside) |
| South African Fertilizers Co., The         | i.                    |
| Stegen, O.                                 | 32                    |
| Steel Murray & Co.                         | 11, 30                |
| Stephan's                                  | 26                    |
| Stewart & Lloyds                           | 29                    |
| Ullmann Bros.                              | 12                    |
| Veterinary Papers for Farmers              | 17                    |
| Wattle Extract Co., The                    | 34                    |
| Wood, William                              | 32                    |



# THE CELEBRATED "Star" Jumper Drill.



Many hundreds of these Drills are now in successful operation in various parts of South Africa by private individuals, syndicates, boring contractors, as well as the Government Boring Departments of the different Colonies. Special efforts are now being made to introduce the "STAR" more widely in Natal, and with this end in view we have arranged for a drilling expert to spend a few weeks here to give advice to anyone interested regarding the formation, prospect of finding water in different districts, and drilling matters generally. The greatest interest is being taken in this matter, and already a number of syndicates for the purchase of Drills are being formed, and at no distant date the "STAR" will undoubtedly be as widely used in Natal as it now is in other parts, to the great

benefit of farmers and the Colony generally. The "STAR" is acknowledged to be the best and quickest drilling machine made, and will bore a 6in. or 8in. hole with great ease and rapidity through the hardest formation, whilst the great advantages of using pure water from artesian boreholes instead of that from spruits, rivers, and open wells, which is often loaded with impurities and disease germs, is apparent to all.

**IF INTERESTED IN THIS WRITE FOR CATALOGUE AND  
FURTHER PARTICULARS.**

## Malcomess & Co., Ltd.,

ESTABLISHED  
1870.

## East London & Durban.

ADVERTISEMENTS.



Now booking  
orders for  
Shropshire Ram  
Lambs. They  
are a good lot  
and plenty to  
select from.

Sheep shown  
from this flock  
at only 2 Shows  
took over 20  
prizes last  
year, and have  
won over 300  
prizes (including  
several cham-  
pionships) open  
to all breeds

**SHROPSHIRE SHEARLING RAM.**

TO BE USED AT STUD THIS COMING SEASON

*Winner  
First Prize,  
Royal Show.*

Sire—"Panama,"  
(11547).

**"SIR RICHARD" (No. 06529R.)**

D.S.—"Coronation,"  
(11402), &c.

❖→ **FOR SALE.** →❖

**YOUNG SHORTHORN BULLS, COWS and HEIFERS.**

**A few good MILK COWS in full profit.**

**100 SHROPSHIRE EWES.**

**P. D. SIMMONS,**

**Stud Farms, Mooi River.**

## Index to Advertisements.

---

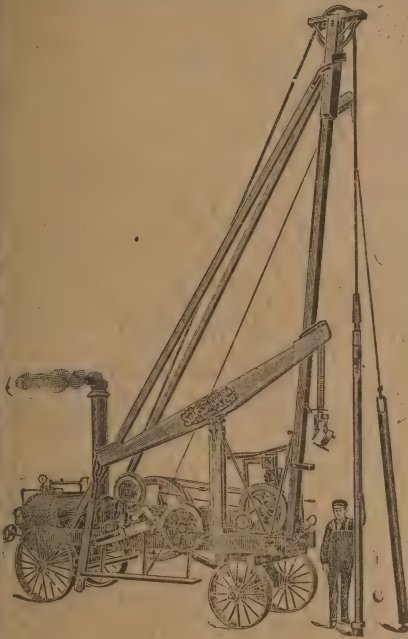
|                                | PAGE.    |
|--------------------------------|----------|
| Agricultural Pests, etc,       | 20       |
| Baerecke & Kleudgen            | 2        |
| Barfield, George, & Co.        | 7        |
| Bell, W. J.                    | 11       |
| Beningfield, Ruben, & Son      | 18       |
| Burmester, E.                  | 3        |
| Cooper, Wm., & Nephews         | viii.    |
| Cotts, Wm., & Co.              | v., vi., |
| Cyclone Gate & Fence Co., Ltd. | 23       |
| Deane, Samuel                  | 7        |
| Dunn, W., & Co.                | 16       |
| Durban's 1908 Show             | 6        |
| Elgie & Emerson                | 13       |
| Fenwick & Co.                  | 25       |
| Fruit Grower's Handbook        | 8        |
| Hayne & Co.                    | 18       |
| Henwood, Son, Soutter & Co.    | 15       |
| Hillsdon & Hillsdon            | 14       |
| Hillsdon & Hillsdon            | 24       |
| Hingeston, C.                  | 32       |
| Hirsch, L., & Co.              | 9        |
| Holmes, Chas. W.               | 1        |
| Hunt, Leuchars & Hepburn, Ltd  | 19       |
| Kimber, P. D.                  | 32       |



# INDEX TO ADVERTISEMENTS.

|                                            | PAGE.                 |
|--------------------------------------------|-----------------------|
| Little's                                   | 10                    |
| Lennon, Ltd.                               | 4                     |
| Lyle Brothers.                             | 17                    |
| Malcomess & Co., Ltd.                      | (Cover—back, inside)  |
| Mason & Son                                | 28                    |
| Mayhew, John                               | 19                    |
| McCrystal & Harkness                       | 17                    |
| Merryweather, J., & Sons                   | 13                    |
| Miller, J. Maskew                          | 12                    |
| Miller & Stephens                          | 32                    |
| Molassine Co., Ltd., The                   | 22                    |
| Monhaupt, G., & Co.                        | 20                    |
| Morrisse, Hubert, & Co.                    | ii.                   |
| Natal Direct Line                          | iv.                   |
| Natal Mill Elevator Co., The               | 23                    |
| Natal Soap Works, Ltd.                     | 5                     |
| Niekerk, J. van, & Co.                     | 17                    |
| Nodular Disease of the Intestines in Sheep | 21                    |
| North, G., & Son                           | vii.                  |
| Ohlendorff's                               | 27                    |
| Peters, J. A.                              | 30                    |
| Raw, J., & Co.                             | iii.                  |
| Reid & Acont's Wool Mart, Ltd.             | 9                     |
| Riekie & Co.                               | iv.                   |
| Simmons, P. D.                             | (Cover—back, outside) |
| South African Fertilizers Co., The         | i.                    |
| Steel Murray & Co.                         | 26                    |
| Stephan's                                  | 10                    |
| Stewart & Lloyds                           | 29                    |
| Ullmann Bros.                              | 12                    |
| Wattle Extract Co., The                    | 7                     |
| Wilson, J. M.                              | iv.                   |
| Wood, William                              | 32                    |

# THE CELEBRATED "Star" Jumper Drill.



Many hundreds of these Drills are now in successful operation in various parts of South Africa by private individuals, syndicates, boring contractors, as well as the Government Boring Departments of the different Colonies. Special efforts are now being made to introduce the "STAR" more widely in Natal, and with this end in view we have arranged for a drilling expert to spend a few weeks here to give advice to anyone interested regarding the formation, prospect of finding water in different districts, and drilling matters generally. The greatest interest is being taken in this matter, and already a number of syndicates for the purchase of Drills are being formed, and at no distant date the "STAR" will undoubtedly be as widely used in Natal as it now is in other parts, to the great

benefit of farmers and the Colony generally. The "STAR" is acknowledged to be the best and quickest drilling machine made, and will bore a 6in. or 8in. hole with great ease and rapidity through the hardest formation, whilst the great advantages of using pure water from artesian boreholes instead of that from spruits, rivers, and open wells, which is often loaded with impurities and disease germs, is apparent to all.

IF INTERESTED IN THIS WRITE FOR CATALOGUE AND FURTHER PARTICULARS.

## Malcomess & Co., Ltd.,

ESTABLISHED  
1870.

## East London & Durban.



Now booking  
orders for  
Shropshire Ram  
Lambs. They  
are a good lot  
and plenty to  
select from.

Sheep shown  
from this flock  
at only 2 Shows  
took over 20  
prizes last  
year, and have  
won over 300  
prizes (including  
several cham-  
pionships) open  
to all breeds

## SHROPSHIRE SHEARLING RAM.

**Winner  
First Prize,  
Royal Show.**

TO BE USED AT STUD THIS COMING SEASON

Sire—"Panama,"  
(11847).

**"SIR RICHARD" (No. 06529R.)**

D.S.—"Coronation,  
(11402), &c.

❖→ **FOR SALE.** →❖

YOUNG SHORTHORN BULLS, COWS and HEIFERS.

A few good MILK COWS in full profit.

100 SHROPSHIRE EWES.

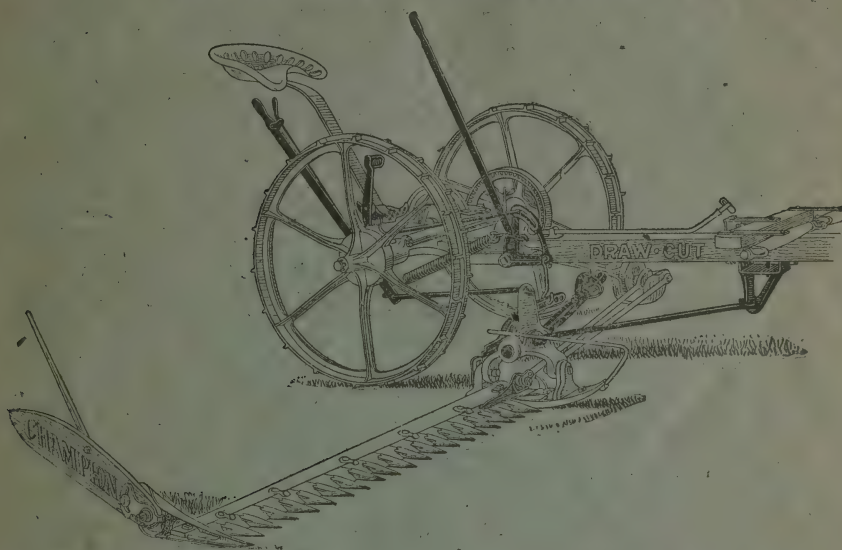
**P. D. SIMMONS,**

**Stud Farms, Mooi River.**



# **“CHAMPION” Mowers & Rakes**

**(BEST AND CHEAPEST).**



**Read the following Testimonial:—**

Broughton, Albert Falls,  
August 9th, 1907.

DEAR SIRS,—The “Champion” Drawcut Mower, with Reaper attached, I have used for the last **five** years, and am pleased to state that it has proved itself a **most satisfactory machine, doing its work well.**

Yours faithfully,

(Sgd.) GEORGE MOE.

Write for Quotations and Illustrated Catalogues to:—

**J. RAW & CO.,**  
**MARITZBURG, (SOLE AGENTS).**

**FLEET.**

|                  | Tons. |
|------------------|-------|
| S.S. Umhlali ... | 5,000 |
| " Umzumbi ...    | 5,000 |
| " Umvolosi ...   | 4,500 |
| " Umsinga ...    | 4,500 |
| " Umtata ...     | 3,500 |
| " Umgeni ...     | 3,500 |
| " Umvoti ...     | 3,500 |
| " Umtali ...     | 3,500 |

**FLEET.**

|                 | Tons. |
|-----------------|-------|
| S.S. Umfuli ... | 3,300 |
| " Umhloti ...   | 3,100 |
| " Umkuzi ...    | 2,800 |
| " Umbilo ...    | 2,500 |
| " Umlazi ...    | 2,200 |
| " Umzinto ...   | 2,200 |
| " Congella ...  | 2,200 |
| " Pongola ...   | 1,800 |

FORTNIGHTLY FAST DIRECT SERVICE BETWEEN

## LONDON      AND      NATAL.

### **To Importers of LIVE STOCK, POULTRY & DOGS:—**

This Line of Steamers affords excellent advantages for the importation of Live Stock of all kinds, and has an unrivalled record for the carriage of the best Pedigree Live Stock and Poultry of the Colony.

The Steamers of the London Service have Saloon accommodation amidships on the Main Deck, and are fitted with Refrigerators, Electric Light, and Bells. Surgeon and Stewardess carried.

Particulars of Sailing Dates, Freight, and Passage may be had on application to:—

**KING & SONS, West Street, Durban.**

## *Calvert's Carbolated Creosote*

Is the most reliable DISINFECTANT for all purposes. Mixes readily in cold water, and can be used as a wash for Cattle, Horses and Dogs. No farmer should be without it. Price is low and quality guaranteed. In 1 gall. Tins, 5 or 10 gall. Drums, and 50 gall. Casks. Prices on application to:—

Agent for  
F. C. Calvert & Co.'s **J. M. Wilson, 398, West Street, Durban.**  
Preparations. P.O. BOX 282.

### **SURVEYS**

— Attended to by —

DAVIDSON RIEKIE, M.I.M.E., Box 188, DURBAN.

**OIL ENGINES, Pumps, Riekie's DIRECT DRIVE Hydraulic Rams, "Progress" Hand Brick Machines, Turbines, Mills, Marine Motors, Pipes, Cylinder and Farm Oils, Petrol, "Silverlight" Paraffin, Packing, etc.**

ESTIMATES FREE.

Contractors to the Government.

**D. RIEKIE & CO.,** 235, Pine Street, Durban.  
(IRRIGATION ENGINEERS.)

**WATTLE BARK**

**MEALIES**

**AND . . .**

**NATAL PRODUCE.**

We are Buyers for Spot Cash,

**Wm. Cotts & Co.,**

**Natal Bank Buildings, DURBAN**

**Produce Merchants, Importers and**

**Exporters . . . . .**

**Telegrams : "COTTS," DURBAN.**

**P.O. BOX 80, DURBAN.**



---

**“ROSEBUD”**

---

**. . FLOUR**

---

**IS**

**THE**

**BEST**

**FOR HOUSEHOLD USE.**

---

**STRENGTH, WHITENESS AND QUALITY**

**. . UNSURPASSED . .**

---

**— TRY IT! —**

**. . Stocked by all Storekeepers .**

---

**WM. COTTS & CO.,**

**. . IMPORTERS.**

— FARMERS IN WANT OF —

# Haymaking Machinery

— SHOULD SEND FOR —

*McCormick's Special Catalogue*

— OR CALL AND INSPECT THE —

McCormick Mowers, Hay Rakes,  
Hay Presses, etc.,

NOW ON VIEW AT

**G. North & Son's**

SHOWROOMS,

DURBAN, MARITZBURG,  
and JOHANNESBURG.

G. NORTH & SON are  
Sole Agents for all  
McCormick Har-  
vesting Machin-  
ery, and keep  
all the wear-  
ing parts.

McCormick's

VERTICAL LIFT

MOWER and

**McCORMICK'S**

SELF DUMP HAY RAKE

are, without exception,  
the two most perfect work-  
ing and up-to-date machines  
ever introduced. These ma-  
chines supersede all other  
makes, as they are made by the

Largest Manufacturers

in the World,

and embrace valuable improvements not to  
be found in any other makes.

**G. North & Son,**

P.O. Box 916.  
DURBAN.

P.O. Box 127.  
P.M.BURG.

P.O. Box 493.  
JOHANNESBURG.

*McCormick's Mowers, Rakes, etc.*

# COOPER'S DIP.

**KILLS SCAB.**

**KILLS TICKS.**

**AND KEEPS BOTH AWAY.**



Farmers should dip Sheep, Goats and Cattle in COOPER'S DIP, which for more than 60 years has been the Stock Farmer's best Friend.

*Write for testimony to—*

**Wm. Cooper & Nephews,**

**P.O. BOX 305, EAST LONDON, C.C.**

# COOPER'S FLUID.

**DISINFECTANT.**

**Strong.**

**CATTLE WASH.**

**Safe.**

**INSECTICIDE.**

**Reliable.**

**SHEEP DIP.**

**KEEPS DISEASE AT A DISTANCE.**



*Vol. XI., No. 3.*

*MARCH 27, 1908.*



. . . THE . . .  
NATAL  
AGRICULTURAL  
JOURNAL

---

---

Published for and Edited in the Department of  
Agriculture.

---

---

**Publishers :**

THE "TIMES" PRINTING AND PUBLISHING COMPANY, LIMITED.

—  
1908.



# CONTENTS.

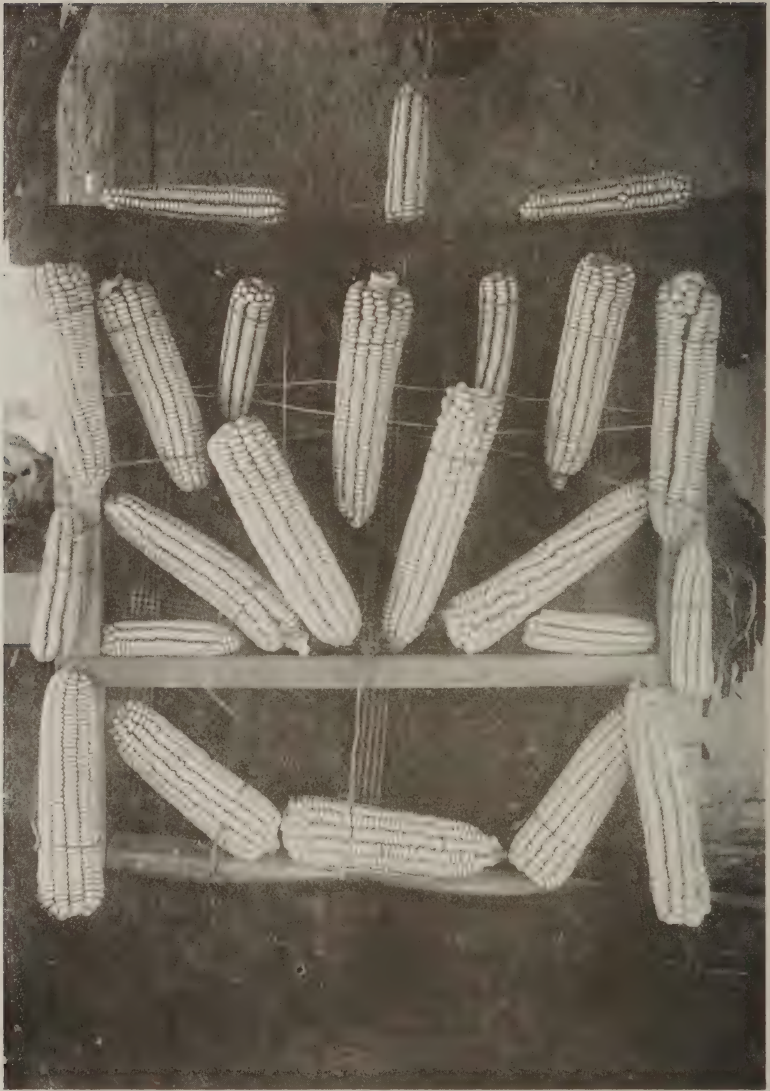
|                                                                           | PAGE |
|---------------------------------------------------------------------------|------|
| AFFORESTATION : Chief Forest Officer's Report for February                | 329  |
| AGRICULTURAL AND OTHER SHOWS, 1908                                        | 357  |
| BACTERIOLOGIST, ANNUAL REPORT OF THE GOVERNMENT                           | 324  |
| BANANA FIBRE, PRODUCTION OF : A Possible Industry for Natal               | 305  |
| BEEES, ENEMIES OF THE                                                     | 260  |
| CAMPBOR SEED                                                              | 258  |
| CAMPBOR, SYNTHETIC                                                        | 259  |
| CEREALS UNDER IRRIGATION. By E. R. Sawyer, Director, Experiment Stations  | 301  |
| CLOSE SETTLEMENT EXPERIMENT                                               | 260  |
| COAL AND LABOUR RETURN                                                    | 353  |
| CORRESPONDENCE :                                                          |      |
| Ewes not Lambing : D. B. Menne.—Cow Records : Chas. R. Skottowe.—         |      |
| New Breed of Maize : J. Cookson, Junr.—The Dog on the Farm : W. F.        |      |
| Evans                                                                     | 341  |
| COTTON, PREPARATION OF, FOR MARKET                                        | 275  |
| DAM-MAKING IMPLEMENTS, COMPETITION FOR                                    | 262  |
| DANISH POULTRY INDUSTRY                                                   | 253  |
| DEPARTMENTAL NOTICES :                                                    |      |
| Analysis, Fees for                                                        | 362  |
| Bulletins issued by the Department                                        | 366  |
| Central Experiment Farm, Cedara                                           | 361  |
| Co-operative Societies, Model Rules for                                   | 362  |
| Diamond Drilling                                                          | 365  |
| E.C.F. Brands Allotted to Infected Magisterial Divisions                  | 356  |
| E.C.F. : Slaughter Cattle                                                 | 363  |
| Employment Bureau                                                         | 365  |
| DIPPING CATTLE. By W. M. Power, Veterinary Officer, Headquarters District | 323  |
| EAST COAST FEVER REGULATIONS, RECENT                                      | 266  |
| ENGINES, SOLAR                                                            | 263  |
| EXCHANGE REVIEWS                                                          | 334  |
| FARMERS' ASSOCIATIONS, EXECUTIVES OF                                      | 358  |
| FIBRE MACHINE, A NEW (DUCHEMIN)                                           | 259  |
| FIBRE, PRODUCTION OF BANANA : A Possible Industry for Natal               | 305  |



# CONTENTS—continued.

|                                                                                | PAGE |
|--------------------------------------------------------------------------------|------|
| GARDENING NOTES FOR APRIL: By W. J. Bell                                       | 339  |
| HONEY, THE PRODUCTION OF: Extracting and Marketing                             | 345  |
| LABORATORY NOTES: Vinegar and Wood Ashes. By Alex. Pardy, F.C.S.               | 331  |
| LAND BOARD: Monthly Meeting                                                    | 328  |
| LIMES, PACKING; BEST METHODS OF                                                | 321  |
| LIQUORICE ROOT (SOUTH AFRICAN) IN ENGLAND                                      | 262  |
| LUNGSICKNESS AND SCAB, FARMS UNDER LICENCE FOR                                 | 355  |
| MARKETS, SOUTH AFRICAN                                                         | 346  |
| MEALIE MARKET, OVERSEA: The Position in February                               | 350  |
| MEALIES, S.A. EXPORT OF                                                        | 264  |
| METEOROLOGICAL RETURNS                                                         | 354  |
| MOLASSES FOR STOCK: Advantages of its Use                                      | 276  |
| NOTES AND COMMENTS                                                             | 258  |
| PASTORAL STATISTICS, CAPE                                                      | 327  |
| PINEAPPLES, PROFITABLE VARIETIES OF                                            | 263  |
| PLOUGH, "CANADA" DISC                                                          | 265  |
| POULTRY INDUSTRY, DANISH                                                       | 253  |
| POUND NOTICES                                                                  | 356  |
| RUBBER IN ZULULAND                                                             | 268  |
| RUBBER MARKET                                                                  | 261  |
| SETTLEMENT, CLOSE, EXPERIMENT                                                  | 260  |
| SHEEP, PERSIAN, IN NATAL. By E. R. Sawyer, Director Experiment Stations        | 269  |
| SISAL CULTIVATION IN NATAL: Major Silburn's Views                              | 293  |
| SOLAR ENGINES                                                                  | 263  |
| TEA BLIGHT                                                                     | 265  |
| TEA DRIER, A NEW                                                               | 352  |
| TEA (NATAL) AND ITS CULTIVATION. By E. R. Sawyer, Director Experiment Stations | 285  |
| TOBACCO TRANSPLANTER                                                           | 258  |
| THE WEATHER AND CROPS: Conditions in February                                  | 344  |





RHODESIAN MEALIES.

An Improved Breed.

(See "Correspondence.")



*The Natal Agricultural Journal.*

***The Danish Poultry Industry.***

---

It is in Denmark that the farmer will find his most impressive object lessons as to the benefits of agricultural co-operation; and indeed no country of Europe has attracted a greater amount of attention by reason of its agricultural developments. Such developments have been on special lines, notably in respect to dairying, poultry-keeping, and pig-breeding; and in this article we wish to show what has been done in the direction of poultry-keeping and how success has been attained.

In Denmark, as elsewhere, poultry keeping was until modern times utterly neglected from the industrial side. Every farmer's wife kept a few fowls for the supply of household needs or to provide pin-money at certain seasons of the year. Upon some of the larger estates a little more was done, but not to a greater extent than in other countries. As left by the Napoleonic wars Denmark was little more than the wreck of a country; and the crippled state of their country turned the minds of the Danes to the necessity for economical development and for increasing the resources of the country. First was taken up the production of butter for export, afterwards followed by eggs and later by ham, with the result, so far as the poultry industry is concerned, that Denmark is now exporting eggs to the annual value, roughly, of one and a half millions sterling. So profitable, in fact, has become the business that the Danes send their own eggs to Great Britain and import eggs from Russia for home consumption, the difference between the price they get for the former and the amount they pay for the latter representing by the end of the year a fairly substantial sum.

## BREEDING CENTRES.

In a report made by Mr. Edward Brown, F.L.S., to the National Poultry Organisation Society of Great Britain, the writer states that recognition of the prime necessity of not merely increasing the number of fowls throughout the country, but also that the greatest amount of success is obtainable by adopting generally one breed or type, led, in the first place, to the almost universal dissemination of the Leghorn; and even now we do not find in Denmark the same diversity of races among ordinary stock as in Britain and elsewhere. A system of breeding centres was established, at which by careful selection the best utility type of fowl of any given breed can be developed, and whence stock birds or eggs for hatching are supplied to farmers and others at reasonable prices. These breeding centres—of which there are about twenty-five in Denmark—have contributed greatly to the development of poultry-keeping. Mr. Brown remarks that, without some such arrangement, the improvement of the poultry found throughout Denmark would not have taken place, both as to the quality of the fowls and the size and number of eggs produced. Farmers, as a rule, cannot give the time necessary to the development of utility qualities. That is the work of specialists.

Although the bulk of the eggs produced in Denmark are obtained from ordinary farms, special poultry establishments are in operation apart from the breeding centres referred to. But, as elsewhere, the number of these is very small, as experience has shown that many difficulties arise which are not found on farms.

A noticeable point about eggs produced in Denmark is their excellent size. This feature was obtained by selection in the early days for size and not for number, breeding being conducted from hens which produced the larger eggs. This, continued year by year, has secured a steady increase in size, until the quality has been largely fixed. The aim was to obtain eggs weighing  $7\frac{1}{2}$  to the pound in the pullet year. Having secured the increased size of egg desired, and ensured that this size shall be maintained, the next step was to increase the average production per hen. Leghorns have always been excellent layers; and, as this breed is the main stock of the country, with ordinary selection the good qualities of the race are well maintained.

In Denmark, as in America, lucerne is largely used as green poultry food. Especially upon lighter soils it grows luxuriantly, producing very heavy crops—sometimes as much as nine tons per acre per annum, and it can often be cut three or four times in one season. The plant growth will last many years. Hence it is a cheap food and the nutrient elements are high. Fowls are very fond of it, and in Denmark it is used extensively, thus reducing the cost of feeding to a considerable extent. In some cases

the birds are allowed to eat it off, but it is generally cut and given to the fowls in the scratching sheds. Dried lucerne is used during the winter season much more than clover hay.

Where fowls are kept in confinement it is generally recognised by poultry-keepers in all countries that meat in one form or another is a necessity to take the place of natural food, such as worms, grubs, etc. In connection with the abattoirs at Copenhagen, and also some of the large bacon factories, fresh blood is made into horse and poultry food, and this is used extensively throughout the country. When received at the factory, which is part of the abattoir, the blood is quite fresh. It is dried at a high temperature, so that the moisture is evaporated, the solids forming a hard mass, which is then ground and mixed with sharps and bran for adult stock, and with oatmeal for chicken feeding. In each case the blood forms the greater proportion. It is dried again at 176 deg. F., which brings it into nearly dry condition, and it is then ground into a fine, dark-coloured powder, in which form it is bagged and sent out. At some of the bacon factories the bones from pigs are ground and sold for poultry.

Generally speaking, natural methods of hatching and rearing are in vogue in Denmark. Incubators are employed at some of the breeding centres and special establishments, but only to a limited extent.

---

### MARKETING THE PRODUCE.

---

To the adoption of methods of marketing in advance of any system which had hitherto been used for the sale of eggs must be attributed the remarkable success which has been achieved by the Danes, both as to the total value of the trade and the position which Danish eggs have secured on British markets.

In the great majority of countries the work of collection and marketing is in the hands of private traders, and combination on the part of producers is a modern development. In Denmark co-operative principles have had a great effect upon the egg industry. In 1894 was formed the Danish Farmers' Co-operative Egg Export Association, the principal Association of its nature in Denmark. To its influence is attributable, in large measure, the great developments of the industry and the remarkable advance in the quality of produce, by reason of the better methods adopted. The Association has its headquarters in Copenhagen, but its packing stations are found all over the country. Each of these serves a large district, and is the centre for a number of local poultry societies. The central organisation has connected with it about 500 local societies, and the total membership is upwards of 40,000.

The first step in the marketing of eggs is undertaken by the local



societies or depots, who arrange to collect from their own members.. Thus the radius varies considerably. It is customary for the work of collection to be put up annually to competition. Before delivery of the collection eggs are stamped with the customer's number. The regulations made by the federation are very stringent, and heavy fines are imposed when they are disregarded or broken. These provide (1) that a member must only deliver to the local society eggs laid by his own hens; (2) he must undertake to collect them from the nests every day, and in the breeding season or when the weather is hot at least twice a day, and keep them under suitable conditions so long as they remain in his possession; any member delivering stale eggs is fined 5s. 6d.; (3) members must have clean nests so that the shells shall not be stained or tainted; and (4) all eggs produced must be delivered to the local society, except those required for hatching and household purposes. Upon the last-named point the very greatest stress is laid, and any member infringing that rule would be fined on the first offence, and be expelled from the Society if the practice were continued. That regulation prevents members selling eggs to private customers when they are scarce and oversupplying when they are cheap. All eggs are purchased by weight, which is perhaps the fairest method for both producer and society, especially as the wholesale price is determined by size. The collector pays for the eggs as received, entering in the member's book the weight and amount, from which the supplies for the year can easily be totalled up.

---

#### GRADING.

---

On receipt of eggs at the packing stations they are weighed and credited to the societies from which they are received, payment being made in accordance with the total weight. As the cases are emptied the eggs are placed in trays with wooden frames, each perforated with 120 holes, in which the eggs stand broad end upwards. Thus they are counted automatically, and the trays are made with broad frames, so that they stand one above the other without injuring the eggs. The grading, or sizing, is principally carried out by women, who are most skilful at the work. No mechanical device is employed; it is entirely a question of eye and hand. When a woman receives one of these trays of eggs, she rapidly gauges the weight of the greater number thereon, picks up all the over or under sized, and places them in other trays, according to their weight. To check the operators every tray is weighed when the grading is done, and if more than one ounce above or below the weight according to which it is graded, it has to be gone over again.

One important reason for the close grading of eggs is to ensure safety in transit. Packed in straw or wood-wool, without any sections,

unless all eggs are of the same size, so that they will be held firmly by the pressure above and below, a large amount of breakage will result. Unevenness of size would mean that the smaller would move, and in the jerking and shaking which cannot be avoided in handling, they could not fail to crack the others or be cracked themselves. The Danes have brought grading to a fine art, and pack separately eggs from 13 to 18 lbs. the great hundred. The boxes used are the usual long, double partitioned Continental cases, which cost 1s. to 2s. each, and hold twelve long hundreds (1,140), that is, 720 in each half. At the bottom is a layer of long straw to act as a cushion, with wood-wool above, upon which is placed the first row of eggs; then another layer of wool, a second row of eggs, and so on for four layers, until the case is filled. As each row is completed the eggs are branded, by means of india-rubber stamps, with the trade mark of the federation or society. All this work is done by women. A covering first of wood-wool and finally of straw fills the case to about an inch above the sides and ends. Then the boards forming the top are nailed on, and the pressure thus given holds the contents firmly, without breakage, by pressure upon the eggs.

---

The man who does the milking should be clean. By this is meant, he should be clean as well as his clothing. The hand who never takes a bath should not be tolerated in the cow lot any more than the hand whose clothes are covered with dirt, tobacco spit and other filth.

---

Legislation such as is referred to in Act No. 29, 1907 (Exportation of Ostriches) having been enacted in Southern Rhodesia prohibiting the exportation of ostriches and ostrich eggs, the exportation of ostriches and their eggs from Natal to that Territory is now permitted by Government Notice in the *Gazette* of the 17th March.

---

For fattening lambs, careful experiments have demonstrated that an even mixture of peas and oats give the best results. Next to this, and with but a small difference in favour of the former, mealies and peas were found best. The fact that peas and oats may be easily and cheaply grown together adds to the advantage of this ration.

## **Notes and Comments.**

---

### **Camphor Seed.**

With reference to our article on camphor cultivation in the January issue of the *Journal*, those of our readers who are thinking of giving the cultivation of this tree a trial will be interested to learn that the Pietermaritzburg Botanic Society are in a position to supply seed from trees in their Gardens. Mr. W. E. Marriott, the Curator of the Gardens, informs us that the seed will be ripe and ready for sowing in about two months' time.

---

### **A Tobacco Transplanter.**

Many tobacco growers are not aware of the fact that efficient machinery can be obtained for the purpose of transplanting the young plants in the field after their removal from the plant beds. Mr. T. A. J. Smith, the Government Tobacco Expert of Victoria, calls attention, in the January issue of the *Victorian Journal of Agriculture*, to the merits of the Bemis Transplanter, a recent American invention, which, he says, obviates the difficulties of transplanting by hand to a wonderful extent, reducing the work to a minimum and doing it better than it can be by hand. Mr. Smith points out that the old system necessitates a man going ahead of the planter with a hoe to break up the soil where the plant is to be placed, the planter puts in each plant by hand, and he is followed by another man carrying buckets of water and watering each plant. This method entails covering the plant with grass to prevent baking of the soil round the plant and scorching of the plant. The machine described is drawn by two horses and is of light draught. It rolls the ground, ploughs and works the soil immediately before the plant is put in the ground, and waters the plant under the surface, leaving a dry well-worked mulch on top. It also distributes a fertiliser if required, and marks out the next row for the machine to travel down. There is no hoeing required, no carrying of water by hand, and the whole of the work is done by a man and two boys, all of whom are provided with seats. It is stated that the machine can with ease transplant three acres, or, in other words, put out 10,000 plants, in two days. It is also said that the machine-planted tobacco actually grows better, and with a smaller percentage of misses, than where the plants are put out by hand. This is no doubt due to the fact that the soil is worked up to the last moment, and that the plants are set in water with a dry mulch covering which prevents evaporation and caking of the soil. Delivered in Victoria the machine costs £16.



### **A New Fibre Machine.**

The attention of those interested in fibre-cultivation is directed to the description of a new set of machinery in the article on the extraction of banana fibre, appearing in this issue. It is claimed for this machine that it will successfully treat, besides banana stems, ramie, Mauritius and Sisal hemp, etc. How far it would fulfil those claims in this country is a matter of conjecture. No harm would be done, however, by obtaining from the agents in London (whose address we give at the conclusion of the article referred to) fuller particulars of the machinery than we are able to give; and its cheapness (£5 or £6) will probably induce some of our planters to give it a trial.

---

### **Synthetic Camphor.**

The synthesis of camphor has been promised for some time, and in fact an impure product has been obtainable on a small scale for more than a year. The *Indian Trade Journal* announces that synthetic camphor is at last an accomplished fact and that a product which is said to respond to all chemical tests of natural camphor and to answer all the industrial requirements of the latter can now be obtained in England in commercial quantities at prices materially below the present cost of the natural article. "Until a few months ago artificial camphor was little more than a scientific curiosity, but within the last two or three weeks it has been placed on the market in serious competition with the product of the camphor tree of Formosa."

---

The difficulty hitherto has been to produce synthetic camphor free from chlorine at a reasonable cost, and it is stated that these difficulties have now been overcome. Apparently until a few months ago the Japanese Government felt assured that both of these obstacles were insurmountable, for it was not until the end of March, 1907, that it introduced an important change in camphor distribution, and within a few months after the price of the refined natural product dropped to the extent of 45 per cent. The price of natural camphor, however, is still substantially higher than at which the synthetic product can be produced, and there seems to be little doubt that in the course of time the competition of the synthetic article will bring the price of the Japanese product very considerably below its present reduced value. It is estimated that at least two-thirds of the world's supply of camphor is absorbed in the manufacture of celluloid, and the new source of supply will therefore prove an enormous stimulus to this industry. The demand for celluloid goods is steadily increasing, and as a result of the excessive prices that have been ruling in the camphor market, the increased demand has to some extent been met by cheap imitations of celluloid largely composed of shellac to which a very small percentage of camphor has been added.

### **A Close Settlement Experiment.**

From the report of the monthly meeting of the Land Board, appearing in this issue, it will be seen that it is proposed to sub-divide one of the lots at Illovo into six nine-acre allotments, as an experiment. It is thought that these nine-acre blocks would, if intelligently worked, yield an appreciable income, as pig and poultry raising, dairying, and the growing of vegetables and fruit, could be undertaken; and, furthermore, married men would, in taking up such holdings, be able to retain their billets elsewhere and so improve their financial position. Mr. Deane has signified his approval of the experiment being made; and, if the result is sufficiently satisfactory, it is proposed to offer certain of the lands at Winkel Spruit in the same way. —

### **Enemies of the Bees.**

In the March number of the *Cape Agricultural Journal* a correspondent discusses some of the enemies of the honey bee, dealing with birds, ants and mice. In the course of his letter he says:—"Bees have as many enemies as locusts. There are two birds which destroy more bees than wasps do. The one is the black bee-catcher (*bij vanger*), with a swallow tail: the other is the yellow sprew with a jet-black head. The first-named bird destroys a lot of bees during a day; this bird builds its nest on high trees and generally chooses a dry branch with two forks or twigs, and between the two forks builds its nest. It does not care to have any branches over the nest, so that when it is breeding it can fly off and catch any bee, butterfly, or locust that passes over the nest. The bird, being a quick flyer, soon overtakes and catches them and brings them back to the young ones, which are generally two or three. I may mention that the bee-catcher builds its nest near a bee-hive or a tree that is in blossom, where the bees come to get their food; thus when the little ones are out the parent bird has not far to go for food for them. She just flies off the nest and catches the bees on the flowers, or straight to the hive where she snaps up the first bee that comes out, and off to the little ones. When she is on the nest it is a good time for the bee-keeper to be ready with his gun loaded with No. 10 shot, and let rip at the nest, by this means killing the whole tribe in one shot. I may further mention I have seen as many as a dozen of these black birds sitting in front of a hive, and every poor bee that comes out is snapped up.

---

"Bees have a great instinct of danger, and while these birds are perched round the hives, the bees will stop working, the same as they do when the wasps are about. This accounts for some of the hives having so little honey. The bees are afraid to come out. If a few hives are near a homestead or placed where they can be seen, you will generally see the

birds busy at one or two of the hives, and these hives have but very little honey. The best times to shoot these birds are cold or cloudy days when the bees are not working so much. The birds will then be found close to the hive, watching for the bees to come out, and if they do, I feel sorry for them. Unfortunately these birds are protected. The yellow sprew is almost as bad as the black bird.

---

"The other enemies of the poor bees are ants and mice. The latter can be kept out of the hives by making the bee entrance smaller. There are several species of ants. First is the long yellow ant, which makes its nest in the hive or under any sack or plank covering which is placed over the hive; second, there is the red ant; third, the black ant with the cocked-up tail, and others as well. These pests do not only destroy the bees, but eat the honey and worry the bees, so that they are compelled to leave their homes. There are means and ways of keeping these pests away from the hives. I will not dwell on this subject any longer, as I am afraid that I have already taken up too much valuable space, for which I apologise."

---

### ***The Rubber Market.***

The *Economist* of the 29th February contains an article on "The Position of the Rubber Market" in which the present situation is explained. After referring to the mistaken impression that exists amongst many people that the recent sharp fall in the price of rubber has been caused by over-production, due to the extension of the rubber-planting industry in Ceylon, the Malay States, and elsewhere, he explains that the price of rubber is entirely controlled by the market conditions for *wild* rubber (more particularly "fine hard Para," from the Amazon), and this, he says, will continue to be the case for several years to come, as, in spite of the great activity in planting, the output of the plantation cannot amount to more than about 25 per cent. of the world's total until after 1912. "The fall in price (fine hard Para is now 2s. 11½d. per lb., as against 4s. 7d. six months ago)," he says, "is almost entirely due to the recent financial collapse in the United States." He considers that to some extent the crisis may be expected to bring about its own cure, as the very large reduction in the number of expeditions sent up the Amazon, as a result of the sudden shutting down of credit and facilities, will naturally result in a considerable shortage of supply compared with previous years. "This shortage will hardly become apparent until next autumn, but the knowledge of its approach will doubtless affect the market in advance; and, provided business conditions in the United States return to anything like a normal state within a reasonable time, there is every reason to anticipate a substantial recovery in the price of rubber."



### **Competition for Dam-Making Implements.**

As a result, apparently, of the success which attended the lucerne-cultivation trials held this year under its auspices, the Cradock Agricultural Society intends arranging a demonstration of dam-making implements some time next year. At a recent meeting of the Society it was decided to give £50 in prizes next year for such implements, the prizes being distributed as follows:—£30 for the best dam scraper, £12 10s. for the best dam plough, and £7 10s. for the best level-taking instrument. It was resolved to charge an entrance fee of £3 3s. for the dam scrapers and £1 1s. each for the plough and level-taking instruments. At the meeting the following points were considered essential and are placed in order of importance:—For *scraper*: (1) draught; (2) tipping; (3) durability and simplicity of construction; (4) capacity. For *plough*: One to work chiefly in hard and stony ground; the strongest plough with lightest draught; it is felt that the ordinary plough used for ploughing land for crops would be suitable where the soil is not too hard and a plough is required to work in ground where an ordinary light plough would fail. For *level*: Accuracy, cheapness and simplicity are to be the chief considerations; there are many good levels on the market, but it is felt that a cheap instrument within the means of all is required; price is a great consideration.

---

### **S.A. Liquorice Root in England.**

An endeavour is being made in Cape Colony to find a suitable market for liquorice root in England. The Cape Trades Commissioner in London has been making inquiries, and on the 23rd January he forwarded the following report to his Government: "The chief business in this article is done in Persian liquorice root. . . The value of Persian liquorice root is about £6 to £7 per ton on the English market. There is not a large sale for this article, and it is only sold in lots of one ton to two tons at a time, and a parcel of 100 tons would certainly take many months to sell. The chief business in Persian liquorice root is done in America, where it fetches from £6 to £7 per ton, and it is occasionally possible to sell there a parcel of 100 tons. For very fine, thick root the London druggists will sometimes pay a fancy price of £15 to £16 per ton for a small quantity, say, two to three tons. As regards the packing, it is no advantage to pack it in wood wool. It can be packed in any strong bags weighing 50 to 100 lbs. each, according to what quantity could be packed in a bag, so long as the bags are of uniform weight. We would again repeat that we fear there would not be a large demand for root such as your sample in this country, but it might occasionally be possible (when the Persian root was very scarce) to sell to America in lots of from 50 to 100 tons, for direct shipment from country of production to the United States."

**Profitable Varieties of Pineapples.**

The December number of the *Cuba Review* contains an article in which particulars are given of the varieties of pineapples which are most worthy of attention. It is remarked that the Red Spanish is the only variety that it is profitable to grow on a commercial scale at the present time. It is a very strong, hardy, and vigorous variety. The fruit is small to medium, weighing from 2 to 8 lb. The flesh is pale yellowish-white, solid and juicy. The flavour, however, is poor, being very acid unless ripened on the plant. For home use the Red Spanish is not to be compared with some other varieties, but it will stand the rough handling that at present seems to be considered as part of the pineapple business. The Golden Queen pineapple is an early variety and is described as a fruit the plants of which do well upon high lands, but will not stand wet soils. The fruits weigh from 2 to 6 lb., and are of a handsome, golden-yellow colour. The flesh is solid and the flavour delicate. Golden Queen is not a long keeper, but an excellent variety for home use. The Smooth Cayenne and Sugar Loaf varieties are also recommended as producers for the home market. The former produces a large, handsome fruit with an excellent flavour. Unfortunately, however, it does not possess keeping qualities, which render it unsuitable for the export trade. The Sugar Loaf pineapple is a late variety which will do well on poor land and is also able to stand drought. The variety is productive, and the fruit has good flavour, but does not keep well.

**Solar Engines.**

We have received from Mr. Frank Shuman, the president and general manager of the Sun Power Company of Tacony, Philadelphia, U.S.A., particulars of his recently invented solar engine. The idea of utilising the heat of the sun for driving steam engines, or other vapour engines, is old; and a great deal of money has been spent from time to time on the construction of solar engines, which, however, for various reasons have more or less proved failures. All of these attempts have been based on the idea of concentrating the rays of the sun by means of mirrors or lenses, focussing the sun's rays on a boiler specially designed, and with this boiler running an engine. In all of these solar engines it was necessary to keep the reflector pointed toward the sun, necessitating complicated clock movements. The objections which have militated against solar engines in the past Mr. Schumann claims to have overcome in the engine which he has invented. This engine is based on the principle of utilising the direct rays of the sun without concentration in what is called the "hot box." This "hot box" conserves the rays of the sun; and in the latitude of Philadelphia, it is stated, temperatures as high as 240 deg. F. have been reached in favourable weather. In the tropics, the inventor

considers, 300 deg. F. and over will be easily reached. The heat conserving in question consists of a flat box of a size presumably corresponding with the number of horse-power required, in which the steam pipes are laid; and above these pipes are two layers of window glass with an air space of about one inch between them. The light rays of the sun (or the radiant heat) pass, without obstruction, through the glass to the blackened iron pipes, and are converted into ordinary heat, which is retained by the two layers of glass. This heat is absorbed in the liquid contained in the pipes and generates pressure which drives the engine.

A drawback to solar power plants is that even in tropical latitudes power is only available for one-third of the total time. At eight o'clock in the morning the power starts, reaches its maximum between 11 and 3 o'clock, and then dies down until 4 or 5 o'clock. This necessitates the use of an accumulator in continuous running engines. This difficulty, it appears, can be got over by the use of liquified air; without the use of liquified air the engine can only be used for pumping water.

### **S.A. Export of Maize.**

Judging by the indications the export of mealies oversea from South Africa this year will assume enormous proportions. Not only Natal but most of the States comprising British South Africa are making active preparations, and we shall doubtless see a good deal of rivalry between the various ports. The Cape arrangements are published in the *Cape Agricultural Journal* for March. The Railway Department undertakes to receive consignments of mealies at any Cape Government Railway Station, to dispose of same on account of sender in London at market price on arrival, and to remit the amount realised by the sale of the same, less 2s. per bag if consigned from stations 150 miles or under from the port, less 2s. 3d. per bag if from stations within 151—300 miles from the port, and less 2s. 6d. per bag if from stations over 300 miles from the port, to cover rail carriage, shipping charges, wharfage, Customs, entries, stamps, ocean freights, commission, and other charges. The Department will be responsible for ordinary risks, but against special risks, such as heating, weevils, etc., consignors must insure themselves if they desire to cover themselves against such risks. The name or private code of the sender, together with name or code mark of station despatched from, as well as letter indicating the class of maize, must be shown on the bags. W, Y, and M will indicate white, yellow, and mixed maize, respectively. Maize must be sent in new bags, double sewn. All maize for export will be graded by the Government Grading Officer at port of shipment. Maize which is not authorised by senders to be examined and marked by the







"CANADA" DISC PLOUGH.  
Breaking up a Wattle Plantation.

Government Grading Officer will not be allowed the benefit of the export rates, but will be subject to the ordinary railway tariff. The charge for maize not entrusted to the Department for disposal, stamping the grade on bags, and granting corresponding certificate, will be  $\frac{1}{2}$ d. per bag. Maize found to be weevily before shipment will be sold immediately on account of whom it may concern, and will on no account be shipped. Moreover, where weevils manifest themselves prior to grading, ordinary and not export rate will be levied.

---

### **Tea Blight.**

In a recent report U.S. Consul-General W. H. Michael, of Calcutta, says that the blight of the tea plant, caused by the bite of the mosquito, is causing a good deal of alarm among the tea planters of India, especially in the Duars. He adds: "The situation has become much worse, and, in response to an urgent appeal from the planters, the scientific and entomological officers of the Tea Association will do whatever is possible to find relief from the pest and the effect of the blight caused by it. It has long been known that the mosquito bite was productive of tea blight, but it was not regarded seriously. The condition, however, has become so widespread and bad that something must be done. Spraying the bushes with any liquid or oil is not practicable, because of the effect on the flavour of the tea leaves, and to cut away the affected parts of the bush gives only a temporary relief, as the persistent attacks of the mosquito serve to perpetuate the blight. The only permanent relief seems to lie in the destruction of the mosquito. How this can be done is the question."

---

### **"Canada" Disc Plough.**

In this issue we reproduce a photo showing the breaking up of a young wattle plantation by means of a "Canada" disc plough, which has been kindly supplied by Mr. V. B. Clarence, of the Clan Syndicate, Ltd., Crammond Siding. The trees shown in the illustration were 23 months old, with an average height of 6 feet and a thickness of  $1\frac{3}{4}$  inches. The plantation had been damaged by frost. In addition to the young wattle trees, the land was also thickly covered with matted grass and weeds. In the illustration the plough is shown working with two discs only, the reason for this being that the trees stand from 3 to 9 feet in height. In trees ranging from 3 to 7 feet, however, three discs may be used. The draught required for this class of work is from 10 to 12 oxen. Mr. Clarence is enthusiastic as to the value of the "Canada," saying that he has not seen a plough to equal it for stubble and dirty lands. From his description of work done by it on his lands it certainly appears to give excellent results.



***Recent E.C.F. Regulations.***

By a Government Notice dated 12th March, the removal from any one of certain infected areas to any other part of the Colony of grass hay and of hides, hoofs, horns, skins or hair has been prohibited except upon written permission from the Principal Veterinary Surgeon. The hides, hoofs, etc., have, moreover, to be first disinfected to the satisfaction of an officer of the Veterinary Department, who may give written permission for their removal. The penalty for an offence is a fine not exceeding £100 or imprisonment with or without hard labour for a term not exceeding six months. The following are the infected areas referred to above: The whole of the Province of Zululand, the Magisterial Divisions of Vryheid, Ngotshe, Paulpietersburg, Babanango, Utrecht, Dundee, Umsinga, Klip River, Weenen, Umvoti, Krantzkop, Lower Tugela, Mapumulo, Inanda, Indwedwe, Pietermaritzburg City, Umgeni, Alexandra, portion of Umlazi Location in Richmond Division, portion of Camperdown Division lying on east of Government Fence, and the whole of Durban County.

Two Government Notices have been issued relaxing somewhat the restrictions enforced by Government Notices Nos. 10 of 1908 and 157 and 254 of 1907 in respect of the Magisterial Divisions of Umvoti and Dundee. By Government Notice No. 10 of this year the Division of Umvoti was declared an infected area within the meaning of the East Coast Fever Act, and the ingress or egress of cattle into or from that area, and the movement of cattle within that area, were prohibited. Under Government Notice No. 108, however, it is now notified that, notwithstanding this prohibition, healthy cattle in yoke may be moved from one place to another within this area on written permission being first obtained from the District Veterinary Surgeon or Stock Inspector of the Division in question; and that healthy cattle for slaughter purposes may be moved within or from this area upon written permission from the Principal Veterinary Surgeon. In both cases the permission is given only subject to such conditions as the officers granting it may see fit to impose. Government Notice No. 121 is in somewhat similar terms as regards the two infected areas, on either side of the main line of railway, in the Magisterial Division of Dundee. By Government Notices Nos. 157 and 254 of last year, the ingress or egress of cattle into or from these areas, and the movement of cattle within these areas, were prohibited. Healthy cattle for slaughter purposes may, however, now be moved from one place to another within either of these areas, and such cattle may also be removed from these areas. In each case permission in writing is required—in the former case from the District Veterinary Surgeon, and in the latter from the Principal Veterinary Surgeon—and in both cases such permission is only granted subject to such conditions as it may be necessary to impose.

By Government Notice No. 161, dated 13th March, that portion of the Magisterial Division of Lion's River lying to the east of the main line of railway has been declared an infected area within the meaning of the East Coast Fever Act, and the ingress or egress of cattle into or from, and the movement of cattle within, this area, is prohibited. Notwithstanding this prohibition, however, healthy cattle for slaughter purposes may be moved from one place to another within this area on written permission from the District Veterinary Surgeon, and such cattle may also be removed from this area with the written permission of the Principal Veterinary Surgeon. The imposition of such conditions as may be considered necessary is, of course, provided for as in the case of other areas.

---

Whilst dealing with the subject of recent East Coast Fever regulations, it will be of interest to note such Proclamations as have lately been issued by the Cape and O.R.C. Authorities. With reference to Cape Proclamation No. 55, dated 4th February, prohibiting the introduction of cattle, animal produce, and grass hay from Natal into Cape Colony, and to Proclamation No. 414 of the 19th August, 1907, prohibiting the introduction of sheep and goats from Natal into Pondoland and regulating and restricting to the drifts at Stanford's Drift and Union Bridge the introduction of sheep and goats from this Colony into East Griqualand, a Proclamation (No. 93) was issued by the Cape Government on the 26th February to the effect that "the introduction of livestock, other than cattle, sheep and goats, and of all articles or things whatsoever, other than animal produce and grass-hay" into Cape Colony from Natal will be permitted only through the Ports of Entry established at Riverside, Umzimkulu, Harding, Ingeli and Middledrift, on the Border. In connection with Cape Proclamation No. 56, 1908, by which a belt was established along the Natal boundary of the Transkeian Territories for the purpose of preventing the spread of East Coast Fever from Natal, within which belt horned cattle were not permitted to remain, another Proclamation has now been issued (No. 82) by which it is lawful to introduce horned cattle from the Transkeian Territories: (a) Into that section of the belt referred to which extends from the Basutoland Border to the Port of Entry established at Ingeli, solely for the purpose of being milked or of being yoked for the transportation of goods between Natal and the Transkeian Territories or for the cultivation of the soil within or removal of produce from the Belt; and (b) to within a distance of not less than 100 feet of the Port of Entry at Middledrift (Bizana), for the purpose of being yoked for the transportation of goods between Natal and the Transkeian Territories: provided (1) that prior to such introduction the owner or person in charge of cattle proposed to be so introduced shall have ob-

tained the written permission of the Resident Magistrate of the District or other officer duly authorised by him to give such permission, and (2) that cattle so introduced shall not be allowed to graze within the Belt above referred to and shall be kept outside that Belt when not required for the purpose for which permission has been granted.

---

In order to obviate risk of East Coast Fever being carried into the Orange River Colony from Natal by means of railway cattle trucks, the O.R.C. Authorities on the 4th March issued a Proclamation (No. 22) regulating the use of such trucks. The introduction into the O.R.C. from Natal of railway cattle trucks has been absolutely prohibited except under the following conditions, viz., that trucks which have been sent from the Orange River Colony for the special purpose of bringing horses from Natal may be returned with such horses on the importer taking reasonable precautions to see that no other animals have been put into such trucks during their stay in Natal and keeping a record of the numbers of such trucks; and that trucks in which horses or cattle have been conveyed from the O.R.C. to Natal may be returned empty with a certificate, signed by the Station Master of the Railway Station in Natal from which such trucks are returned, to the effect that no cattle other than those despatched from the O.R.C. have been placed in those trucks and that the trucks have been thoroughly disinfected at his station by spraying them with a solution consisting of one pound of arsenic dissolved in twenty gallons of water. The penalty for contravention of this Proclamation is a fine not exceeding £50, or imprisonment, with or without hard labour, for a period not exceeding six months.

---

### ***Rubber in Zululand.***

The Durban correspondent of the *S.A. Trade Journal* refers, in the March issue of that journal, to the developing rubber industry of Zululand. He recently had a conversation with a man who is managing an extensive rubber venture in the extreme north of that Province (the concession, as a matter of fact, runs into Portuguese territory). There are five white men employed and a large number of natives. Some 15,000 plants have been put in, and a further area has been cleared. Rubber is already being collected in small quantities from the indigenous trees, and a quantity sent to England a short time ago was, it is stated, very favourably reported upon. At present the distance from the railway is the drawback, but the owners seem well satisfied with their prospect. They have been working for about a year, and it will be three more years before any great quantity is available for export.



## ***Persian Sheep in Natal.***

By E. R. SAWER, Director Experiment Stations.

So satisfactory have been the results secured in Natal from a small flock of Persian sheep obtained from the Cape Colony in December, 1906, that it would now appear desirable to direct the attention of the farming community to the many advantages accruing to the employment of this breed for specific purposes. For it is confidently anticipated that in the near future the coast region, heartwater districts and large areas of veld too poor to carry merinos will be exploited and forced to yield a revenue through the agency of one or other type of the Persian sheep.

### NATURAL HISTORY.

So little is generally known of the origin and history of this group of domestic sheep that the following brief account, compiled from notes kindly supplied by His Britannic Majesty's Consul at Bushin, Persia, will be read with interest by all flock-owners, as establishing the suitability of the described types to a wide range of local conditions.

Generally speaking, there are only two distinct breeds of sheep in Southern Persia and Arabia, viz., the Arabi and the Turki or Suri, while in some localities a third, or cross-bred, type may also be distinguished. The Persian sheep are uniformly very hardy little animals which can thrive on next to nothing, finding food where other animals would die of starvation, and, despite their slender build, are well able to stand inclemencies of weather, particularly the heat and scorching winds which are so prevalent along the low lands of Southern Persia and Arabia. This hardihood is found especially in the Arabi, although of lighter build than the Turki, which are more generally found in the hilly or higher lands. A rough comparison of the two classes can be made as follows:—The Arabi is of lighter build, and has a more drooping tail; it is better adapted to the plains and scorching winds, and its wool is finer and of greater value. The Turki is of heavier build, more suitable for the hills and the migratory habits of its owner; its wool is much coarser and its fat tail is rounder and better set up. The Arabi wool is fine in quality, the staple is long, very elastic and of good, silky texture. It finds a fairly ready market in England and on the Continent, where it is mostly used in the manufacture of the coarser woollen goods. The Turki or Suri wool is very coarse and locky, the staple is very straight and shorter than the Arabi, with little or no elasticity; in fact it partakes more of the nature

of hair. This class of wool has hardly any market in Europe as it is not used for manufacturing woollen goods, and will not even do for carpet-work. This difference in the quality of the wools is attributed by some to the different pasture and mode of living of the two classes of sheep. The Arabi sheep living on the plains get better food and are not so constantly on the move, whereas the Turki are always migrating with their owners and have to pick up what pasturage they can get on the road, and their food consists chiefly of oak-leaves and lichen found on the mountain sides. As regards the wool of the cross-bred sheep, this is inferior to that of the Arabi, but superior to that of the Turki. It can be used for carpet-making, and is exported largely to America, where it enters under the low duty scale, while the better class Arabi wool has to pay the higher duty. This has consequently created a demand for this quality of wool, and is no doubt inducing the rearing of cross-breds.

#### MANAGEMENT IN PERSIA.

A certain amount of care is taken in the breeding of the sheep, and particularly in keeping the different breeds apart. In the districts most noted for lamb skins every precaution is adopted to prevent the introduction of any other colour than black, although where wool is the chief requirement whites and greys are sought after. The ewes get into the rutting humour twice a year, but are as a rule only tupped in the autumn, lambing in spring when grass and food generally is plentiful. The skins of lambs born in the autumn are, however, considered to be superior to those of lambs born in the spring.

In the summer, when grazing is poor, the sheep subsist largely on wheat and barley stubble, wild shoots and fallen leaves from trees and shrubs. During the spring when sweet grass is plentiful, they are taken twice a week to graze on marshy ground, or such soils as carry herbs of a salty nature, with a view to keeping them in health. For water, in the spring and rainy months, the flocks are generally taken twice a day to the nearest stream or pool, but in summer when these are dry, they have to be content with brackish water from wells wherever it can be obtained, and this only once a day.

As a rule a number of goats are to be found in each flock of sheep, and are trained to lead the latter, just in the same manner as a horse is trained to lead a caravan of mules. These goats have better homing instincts and not only lead the sheep to the pick of the grazing, but, as they are much less prone to taking fright, also prevent the flock from shying or stampeding.

In their native habitat the Persian sheep can be considered fairly immune from disease, but scab does exist and is more prevalent in years of scarcity; the cure for which, along the sea coast, is the application of

shark oil, and, inland, linseed and other oils. "Gid," or "turnside," is another disease of rather formidable character, due to the gross infestation of the sheep's brain by the hydatids of the tape-worm (*Cysticercus toenia echinococcus*). This affection is known among the natives of Persia as "Abutarbar," literally meaning "Father of the axe," which they take no means to prevent, or cure, as they believe the sheep suffering from it is struck by a devil.

#### INTRODUCTION INTO SOUTH AFRICA.

The introduction of the breed into South Africa was by chance, and by mere chance also was the important discovery made that the breed would live and thrive in heartwater areas deadly for goats and other sheep. The original importation was in 1872. The story is that Captain Manson, of a Capetown shipping firm, noticed a few of the animals on a vessel from the Mediterranean anchored in Table Bay. Being attracted by the singular appearance of the animals and learning that they were for slaughter, he effected an exchange for Cape hamels. From Captain Manson the sheep passed to the late Mr. Charles Barry, who sent them to his farm in the Robertson district, C.C. Two of them were ewes, and by good fortune one of these soon dropped a ram lamb. From these few animals was formed the first flock of Persian sheep in South Africa. After Mr. Barry's death, his son, the late Mr. Michael Barry, acquired the flock and introduced new blood into it by importing from Arabia two rams and ten ewes about 1884. No other importations are known to have been successful until 1904, when Messrs. Barry Bros., of Montague, succeeded in landing eight ewes and a ram shipped from Aden. The original flock was divided many years ago, and a number of pure or practically pure flocks are now scattered about the sub-continent.\* All the earlier importations were of the non-woolled or Turki variety, and prominent among breeders of this type are Messrs. S. M. Gadd, of Tafelberg, and Hougham Abrahamson, of Somerset East, from whom were obtained in December, 1906, two stud rams and forty selected ewes for the establishment of small breeding mobs at the Cedara and Winkel Spruit Experiment Farms. After a year's trial and the establishment of their suitability to local conditions, a further and larger importation of breeding stock was effected and the sheep distributed to private applicants.

In the interim interest has been aroused in a project for introducing Arabi or woolled sheep, and in September, 1905, Messrs. Moss & Wordrop, of East London, succeeded in temporarily lifting the embargo on the exportation of cattle and sheep, immediate advantage of which was taken to secure a sample lot of six woolled Persians, this small number being sent in the first place because they presented an entirely new type to that

---

\* *Vide* "Cape Agricultural Journal," Vol. XXV., page 177.



already known in South Africa as "Persians," and it was desired to ascertain first of all how this animal would be viewed by our farmers. This question has been very definitely settled, and in fact was a foregone conclusion, as the new kind not only eclipse the black-headed breed as a butcher's animal but in addition carries a very valuable wool.\* Of the six sheep above-mentioned all except one ram are still alive. Mr. Gadd secured one ram and two ewes and now has a small pure bred flock of the type. Immediate application was made on behalf of the Natal Department of Agriculture for a supply of these animals, but the imposition of further obstacles to export by the Persian Government rendered the delivery of a further consignment impossible at the time. During the current month, however, Messrs. Moss & Wardrop have succeeded in landing an additional twenty-eight sheep, of which three rams and three ewes are now running at Cedara, and rapidly recovering from the effects of the voyage. All earlier reports point to the facts that the sheep are extremely hardy, quick-maturing and prolific, thriving on scanty scrub pasturage and in drought-stricken districts, but at the same time responding quickly to better veld conditions. It is claimed by owners that they are the finest and most profitable sheep in the world for South African farmers to keep whose veld is not sufficiently good to carry merinos every year. Several of the rams have been utilised for cross-breeding with bastard (Persian-Merino) ewes on poor veld, and the resulting strain is reported to be most satisfactory, the progeny being very large, hardy, thrifty, quick-maturing, and carrying a very fair fleece.

#### RESISTANCE TO HEARTWATER.

In August, 1904, Mr. C. P. Lounsbury, Entomologist, and Mr. W. Robertson, Bacteriologist to the Cape Department of Agriculture, furnished the following valuable contribution to our knowledge of the disease known as heartwater. The Persian breed of sheep had been a favourite from the start owing to their hardiness, great prolificacy and early maturation for market. Quite naturally, in time, flocks were formed in and about the heartwater area, and then it was noticed by one party after another that the breed enjoyed apparent freedom from this dread disease. Public attention was drawn to the fact by the *Grahamstown Journal* for August 3rd, 1898. Therein it was cited that some months before Mr. T. E. Wood had sent a truck load of Persians mixed with merinos and Cape sheep on to a pasturage near Grahamstown. All the merinos and Cape sheep soon sickened and died of heartwater whilst the Persians remained unaffected. And further that a number of lambs bred by Mr. Pater from merino ewes by a Persian ram escaped the disease when all their mothers died. G.V. Surgeon R. W. Dixon in the following year

---

\* Vide "Cape Agricultural Journal" Vol. XXVII. page 434.

commented on the apparent natural immunity of the breed in a departmental report. He was engaged in investigating heartwater at the time, and for experimental purposes formed a mixed flock of Boer and Angora goats, and merino, Cape, and cross-bred Persian sheep on badly infected veld near Fort Beaufort. The Persians remained healthy, whilst before the summer was half over from one-third to one-half of the goats, and the other breeds of sheep, had contracted and succumbed to the disease. The Persians in this case were the first cross of merinos with a Persian ram.

After experimental investigation at Capetown had clearly demonstrated the association of heartwater with the Bont tick (*Amblyomma hebraeum*), and had shown that cattle in common with goats and ordinary sheep would keep the infection alive on a farm, the thought naturally suggested itself that the apparently immune Persian sheep, if farmed in the absence of susceptible stock, might perhaps serve to eradicate the infection and thus in a few years render the veld as healthy for woolled sheep as it was before heartwater was introduced.

Exhaustive experiments, however, have shown that the Persians, although they may live and thrive on heartwater veld, are nevertheless susceptible to the disease and will doubtless indefinitely keep up the infection though farmed in the absence of animals to which the disease is fatal. The astonishing resistance of the breed, however, is a matter of much importance, and the resistance is very forcibly demonstrated by experiments. It seems quite safe to assume that by farming this breed the very worst of the heartwater area can be made heavily productive of sheep for slaughter.

At the time the above report was compiled some doubt existed as to whether all fat-rumped sheep in Persia and other countries were resistant, and it was pointed out that the information obtained to that date applied only to the descendants of a flock formed from a few sheep bred no one knew where, and a few later introduced from "Arabia." There was no surety that it applied to Persian sheep from Persia or anywhere else. In the following year, however, Persian sheep of an entirely new type, to wit, the woolled or Arabi, came under observation, and one of the original six animals mentioned above was tested as to its resistance to heartwater by the application of pathogenic bont ticks sent by the Agricultural Department at Capetown for the purpose. The animal was most carefully watched during the experiment and no reaction was noticeable in any way. This experiment is being duplicated at the present time with one of the sheep received directly from Persia during the past month, and, should the results be equally satisfactory, a strong presumption will be raised that all varieties of the Persian sheep, as a breed, are naturally immune from this terrible scourge.

For the past fourteen months a mixed flock of pure and half-bred

Persian sheep has been exposed to natural infection at Cedara without a single resulting case of sickness; while at the Winkel Spruit Experiment Farm, notoriously a heartwater area, mortality from this cause has been confined to date of writing to a single half-bred Persian-merino ewe. The latter finding would open a prospect of the profitable employment of the breed as an element in coast farming, and it is purposed to establish a second flock in Zululand at Empangeni as an ultimate test of endurance to the heat obtaining on the northern coast belt.

#### PROTECTION FROM "BLUE-TONGUE."

The susceptibility of Persian sheep to "blue-tongue" was early demonstrated at Cedara by the occurrence of a case of natural infection in a pure-bred ewe. The mild reaction shown and ultimate recovery would however, point to considerable constitutional resistance. Protection was afforded to the remaining animals by means of inoculation with serum secured from Dr. Theiler, of the Transvaal Department of Agriculture, and no additional cases have been recorded. During the current season supplies of serum have been secured from the Allerton Laboratory and the treatment applied to a second flock of these sheep recently secured from Cape Colony, with equally satisfactory results. Virtual immunity from heartwater and the protection thus readily and cheaply afforded against "blue-tongue" obviate the two greatest dangers to which the sheep-farmer is exposed in South Africa.

#### OTHER ADVANTAGES.

Constitutional resistance to disease, though perhaps the most important, is by no means the only advantage to be adduced in favour of this breed. The sheep shows marked prolificity and a very early maturity. At Cedara one hundred per cent. September lambs have been secured from a flock consisting entirely of two-tooth ewes. At the end of the year, 31st December, 1907, the ram lambs averaged 48 lb. live weight and the ewes 42 lb., while several of the former topped 60 lb. No difficulty should be experienced in placing fat lambs on the market at eight months weighing 100 lb. The type is not too heavy-boned or large-framed and requires only a medium amount of flesh to make the carcase smooth and plump at the weight indicated. Dressed weight averages 58 per cent. of live weight. The meat is unsurpassed in point of texture and flavour.

#### THE WOOL OF THE ARABI PERSIAN.

As might be expected, the character of the wool derived from the few Arabi Persians found as yet in South Africa has been a subject of great interest to actual or prospective owners. Mr. G. Root, a recognised wool expert, who has handled this special kind of wool for 20 years in



England, after inspecting the 1905 consignment of these sheep, reported that the wool they carry is excellent both in quality and quantity, the eight months' clip being about 5 lb. in weight. Taken all round, he said, the quality is remarkably even, and he unhesitatingly expressed his hearty approval of the idea of introducing this sheep into South Africa, for which it is admirably suited. The breed, he added, is very hardy, prolific, quick maturing, and well suited to any districts subject to drought or where pasture is poor, besides being heavy in carcase and well suited for butchers' purposes.

---

With reference to the warning published recently against emigration to Angola on the chance of obtaining employment, the following further telegraphic warning by the British Consul at Loanda is published in the *Natal Government Gazette*: "Referring to your letter of January 31st, 1907, increasing influx of British subjects causing great distress. No truth in rumour employment obtainable."

---

PREPARATION OF COTTON FOR MARKET.—In a Farmers' Bulletin issued by the United States Department of Agriculture appears the following note drawing attention to the importance of special care in the preparation of Sea Island cotton for market, which should be found helpful by those which are giving attention to the cultivation of cotton in Natal. "Next in importance to seed selection," it is stated, "is the preparation of the staple for market. Sea Island cotton from the mainland has an unenviable reputation for poor preparation, as compared with the Carolina Sea Islands product. The farmers seem not to consider the delicate nature of the staple, and handle it as carelessly as they would Upland varieties, whereas it requires special care at every stage from boll to bale. Too often it diminishes in value by exposure to weather in the field, by being mingled with broken leaves and yellow cotton in picking, by being stored undried when gathered damp, or by careless ginning. The lustre of the staple once lost can never be regained. The admixture of weak and stained cotton means a loss to the spinner from waste and from cost of cleaning, and this loss must be made good by a reduction in the price paid the farmer."

## **Molasses for Stock.**

### ADVANTAGES OF ITS USE.

THE stimulating effect of sugar upon the system both of human beings and of animals is now fairly generally recognised. In the German, and, we believe, other Continental Armies, as a matter of fact, sugar is served out as part of the ordinary rations; and its value after long marches or other physical exertion is undeniable. In the feeding of stock the use of molasses is steadily making its way among stock-owners and dairymen, and in various ways it is being utilised for cattle food. Residuum molasses from the sugar beet factories is used in Europe as a food for all kinds of farm stock. The first suggestion of the use of molasses as a stock food was made by Hermstadt in 1811. The first recorded ration was used in 1830, and consisted of chopped straw and 220 lbs. of molasses per day for 2,000 sheep, 80 head of cattle and 20 horses. In 1850 rations mentioned by Stockhart, Hennenburg, and Stolman, consisted of molasses, oat-straw, and hay. They limited the amount of molasses to 8 pounds per 1,000 lbs. live weight of the animal fed. By 1860 the use of molasses became quite general in Germany, France and Russia, and by 1870 its use had spread to England. Owing to the cost of molasses and the variability of the product, the demand for it did not increase rapidly until about 1890, when the increased production caused a marked decrease in price. It is estimated that now about one-third of the molasses produced in Europe is used as forage for stock. It is fed either diluted with water as a drink, or mixed by the feeder with a variety of substances, such as cut hay, finely ground straw, brewers' dried grains, malt sprouts, wheat bran, cocoanut cake, dried beet pulp and dried potato residue. Many manufactured foods are also offered, among which may be mentioned the dried mixture of straw and molasses made according to the formula of Lambert-Toury, and known as *pail-mel*; *Torf Melasse*, composed of dried peat and molasses; *Klimax Melasse*, consisting of ground twigs, ground horse-chestnuts and molasses; *Blut-Melasse*, containing small quantities of dried or fresh blood mixed with barley, peanut, oat and rice hulls. In New England (U.S.A.) cane molasses brought in tank steamers from Porto Rico has been offered freely at about 6d. to 7d. a gallon of 12 lbs., in barrel lots. In the southern part of the country (especially in Louisiana) cane molasses is used quite freely as a food for horses and mules in quantities varying from 5 to 15 pounds or more daily. There are likewise many cattle foods made and sold in the Northern United States which

contain considerable quantities of molasses, such as the Sucrene dairy and Sucrene horse feeds, Green Diamond, Holstein and Molac sugar feeds, Hammond dairy feed, etc., whilst our own farmers are familiar with the name of "Molassine" meal. In this country, too, sugar cane is grown specially for stock, being chopped up and mixed with hay and forage. In Australia there are several preparations of molasses on the market. In some cases it is combined with the cane fibre and formed into blocks, and in others it is made into a solid form by compounding it with chaff and meal. Some of the farmers use it by simply mixing it with water and pouring it over the dry feed to increase its value.

### COMPOSITION OF MOLASSES.

Molasses may be defined as the residue resulting from the extraction of sugar from the juice of the sugar cane or sugar beet. The following analyses, made by the Massachusetts Experiment Station represent the composition of samples of Porto Rico (cane) molasses, as compared with best molasses of average quality:—

|                                                    | Cane Molasses.<br>Per cent. | Beet Molasses.<br>Per cent. |
|----------------------------------------------------|-----------------------------|-----------------------------|
| Water . . . . .                                    | 24.98                       | 21.90                       |
| Ash . . . . .                                      | 5.57                        | 7.20                        |
| Crude Protein (Albuminoids and<br>Amids) . . . . . | 2.19                        | 10.50                       |
| Extract matter:                                    |                             |                             |
| Cane sugar . . . . . 37.86                         | 67.26                       | 60.40                       |
| Invert sugars . . . . . 20.48                      |                             |                             |
| Undetermined . . . . . 8.92                        |                             |                             |
|                                                    | 100.00                      | 100.00                      |

Molasses is shown to consist of about one-third water, considerable ash, a little nitrogen, and the balance of non-nitrogenous extract matter. Molasses has the same type of composition as mealie meal, both being low in protein and very high in carbohydrates. The dry matter of molasses differs chemically from mealie meal in containing less nitrogenous matter with an inferior nutritive value, more ash, and in having its extract matter in the form of sugars rather than starch.

We have before us two interesting bulletins on the subject, issued respectively by the Maryland and Massachusetts Agricultural Experiment Stations and containing details of feeding experiments with molasses upon farm stock. The experiments reported in the Maryland Station



bulletin consisted in a study of the digestibility of the principal sugar feeds in the market, and the effects of the molasses on the digestibility of hay and mixed grain rations; whilst the Massachusetts bulletin gives the results of experiments upon dairy cows, horses and pigs, together with some notes on molasses dairy feeds.

### MOLASSES AND DIGESTION.

It can safely be assumed that molasses, being soluble in water, is easily digested and assimilated. It is a well-known fact, however, that the addition of considerable quantities of starch, sugar, and similar substances causes a distinct depression in the digestibility of the materials with which they are fed. By digestion depression is meant the checking of the digestion and assimilation of the other feeds.

A number of experiments have been made to study the influence of Porto Rico molasses upon the digestibility of the other ingredients of the ration. The results so far are thus briefly stated by the Massachusetts Station bulletin above referred to:—

1. When molasses fed together with hay constituted from 10 to 15 per cent. of the total dry matter of the ration, little if any depression was noted.

2. With molasses composing some 20 per cent. of the dry matter of the hay ration, a depression of 4.5 per cent. was noted in the digestibility of the hay, the digestibility of the latter being 58 per cent. without the molasses and 55.4 per cent. with the molasses.

3. Molasses and hay would not make a satisfactory combination for any kind of farm stock. A more suitable ration would consist of hay, together with one or more protein concentrates and molasses. Consequently the effect of molasses was tested upon a combination of hay and gluten feed. The results of six single trials in which molasses composed from 17 to 24 per cent. of the dry matter of the ration (average 20 per cent.) show that the dry matter of the combination of hay and gluten without molasses was 72.3 per cent. digestible and 66.5 per cent. digestible when fed with the molasses, hence the molasses caused a depression of 8 per cent. in the digestibility of the hay and gluten.

4. Stated in terms of molasses it may be said that with molasses composing some 20 per cent. of the dry matter of the hay-molasses ration for every 100 grams fed the depression noted was equivalent to 7 per cent. of dry matter and 4 per cent. of organic matter.

5. When molasses composed from 17 to 24 per cent. of the dry matter of the hay-gluten-molasses ration, for every 100 grams fed the depression noted was equivalent to 7 per cent. of dry matter and 4 per cent. of organic matter.

By deducting 15 per cent. from the 68 per cent. of total organic matter found in Porto Rico molasses, one obtains 53 per cent., equal to 1,060 pounds, or in round numbers 1,100 pounds, which may be said to represent the available organic matter in 2,000 pounds.

Kellner, a prominent German investigator, states that the value of beet sugar molasses for cattle and sheep consists in its 55 per cent. of digestible carbohydrates (1,100 pounds to the ton), allowance being made for a digestion of 9 per cent.

Lehmann, another prominent worker, as a result of three digestion experiments (9 single trials) with sheep, obtained a digestion depression of 11 per cent. which he deducts from the 71 per cent. of total organic matter in beet molasses, thus securing 60 per cent. or 1,200 pounds of digestible organic matter in one ton.

Grandeau and Aleken have shown that molasses, when fed to horses, causes rather more of a depression than when fed to ruminants. (In case of horses the addition of 2 pounds of molasses per 1,000 pounds live weight caused a depression of 4.5 per cent., while with ruminants the feeding of 4 pounds of molasses per 1,000 pounds live weight produced an average of 3 per cent. in the digestibility of the ration.)

The results of the experiments conducted by the Maryland Experiment Station showed that the addition of molasses to a ration has a tendency to increase the digestibility of both hay and grain feeds. This, coupled with the generally observed fact that molasses contributes toward making feeds more palatable and also acts as an appetiser, gives to molasses a relatively high place as a stock food and makes it more valuable than its analysis alone would indicate.

In studying the results it was noticed that the protein was sometimes not so digestible in the presence of molasses, and this has suggested the thought that it may be that the presence of the readily available energy of the molasses has filled the requirements of the animal and thus not necessitated the breaking up of more difficult protein compounds.

---

### MOLASSES FOR DAIRY COWS.

---

Experiments were undertaken by the Massachusetts Experiment Station with the object of comparing molasses with mealie meal as a partial component of the daily grain ration in its effect upon (*a*) the health, weight, and physical appearance of the animal used; (*b*) the production of milk and milk ingredients; (*c*) the chemical composition of the milk; and (*d*) the cash income and expenditure.

It was not possible to observe any practically favourable effect of the molasses on the general health and appearance of the animals, all of which were in uniformly good condition during the entire experiment. The

faeces from those animals receiving the molasses ration had a noticeably dark colour and were softer than from the animals to which the mealie meal ration was fed. If too large an amount of molasses is given at first, purging is apt to result.

It was found that the mealie meal ration produced substantially 9 per cent. more milk and 11 and 13 per cent. more total solids and milk fat than did the molasses ration. The molasses appeared to have produced milk with slightly less fat and solids not fat. Whether this is to be attributed to the molasses is not clear. It was also found that the mealie meal ration produced a definite amount of milk and butter fat for less money than did the molasses ration; and it required from 6 to 10 per cent. more dry matter and from 3 to 6 per cent. more digestible matter to produce milk and butter with the molasses than with the mealie meal ration.

In order to ascertain the effect of molasses upon the character of milk and butter, a number of samples of milk from each cow was taken in thoroughly sterilised glass bottles, brought to the laboratory and tested when both cold and warm by two different parties. Only in the case of one cow was a distinct molasses taste noted. Repeated tests of other samples from the same cow failed to reveal the characteristic taste.

Numerous foreign experiments are recorded relative to the value both of raw molasses and of molasses feeds for milch cows. The results are often contradictory; in some cases it is indicated that molasses increases the fat percentage in the milk, and in cases the body weight.

The general conclusions at the Copenhagen Experiment Station, when experiments were conducted according to the Fjord method were that maize, wheat, wheat bran and also molasses had substantially equal values for dairy stock, but that for milk production these were inferior to concentrated feeds rich in protein and fat. A molasses ration did not cause any marked change either in the condition of the animal or in the quality of the milk. It had no effect on the composition of the butter fat other than to increase the melting point some two degrees and render the butter firmer.

Ramm's investigations led him to conclude that the amido bodies contained in the molasses act as a stimulant upon the mammary glands and check the normal diminution in the secretion of the milk. Both Ramm and Hagermann further maintain that the organic matter other than sugar in the molasses increases the fat percentage and the butter producing quality of the milk.

P. Hoppe demonstrates that the addition of small quantities of molasses (2 pounds daily per 1,000 pounds live weight) causes a small increase in the daily milk production, but that the yield is noticeably decreased when the amount supplied daily reaches four pounds per 1,000



pounds live weight. Contrary to Ramm and Hagermann, Hoppe notes a decrease in the fat percentage of the milk. He further concludes that an intensive molasses diet is not suitable either for dairy animals or for any other farm stock.

### MOLASSES FOR HORSES.

German investigators have studied the value of both cane and beet molasses as a component of the daily ration for horses.

Kellner remarks that "in addition to the food value of molasses it possesses another very valuable characteristic in that it prevents colic or renders the attacks much less severe. Whoever has once fed molasses to his horses and observed its favourable effect is not inclined to discontinue its use. One must, however, feed it in moderate quantities, since an excessive amount will act as a purgative as well as a diuretic." The investigator considers 3 pounds daily a fair allowance for horses weighing 1,000 pounds.

French investigators, as a result of extensive experiments, call attention to the injurious effect on the kidneys and digestive organs of excessive quantities of molasses (12 to 20 lbs. daily). They emphasize the value of molasses as a condiment mixed with otherwise unpalatable foods, and its influence in improving the appetite and digestion of horses out of condition, and likewise its favourable therapeutic effects in case of colic and in respiratory troubles. Nicolas, Lavalard, Laurent, Hollard, Dickson, Malpeaux, Grandeau, Garola and Sidersky have made numerous experiments with horses concerning the value of molasses. The molasses has been fed diluted with water and sprinkled over with hay and straw, and also mixed with a variety of substances such as peat, oil cakes, bran, finely cut straw, brewers' grains, etc. These authorities consider 5 pounds daily the maximum quantity for horses weighing 1,000 pounds. Laurent, as a result of his experiments, draws the following conclusions:—

"1. The employment of molasses as a portion of the ration for draught horses is to be recommended on economic and hygienic grounds.

"2. The molasses acts as a condiment which, mixed with coarse fodders, straws and the like, favours their resorption; it is likewise a food and perhaps serves in the ration in place of some other ingredients of nutrition.

"3. The objections to the use of molasses in its natural state are not serious, and farmers ought to thus use it in place of the commercial molasses feeds. The latter are more easily handled but cost so much that their use is not considered economical."

M. Hollard reported to the French Society of Veterinary Medicine the satisfactory results which he had secured with molasses as a component of the daily ration for farm horses. He did not purchase molasses

feeds, believing it preferable to mix the clear molasses with some of the less desirable roughages, thereby rendering them more palatable. In winter he fed some 2 pounds of molasses daily at night in place of 2 pounds of oats, and in the busy spring and summer months this amount was doubled, the extra quantity being fed at noon. By replacing one-half of the oat ration (12 pounds daily) with molasses and dried brewer's grains he was enabled to effect a saving of 8 cents per head. The animals kept in uniformly good condition and did fully as satisfactory work as upon the oat ration.

In the southern United States, especially on the sugar plantations of Louisiana, large quantities of cane molasses (blackstrap) are fed without any apparent ill effects. Dalrymple states that the consumption of molasses per day on forty-seven sugar estates during April, 1905, averaged just about 10 pounds—the extremes being from 2 to 3 pounds to a fraction over 21 pounds—all seem to refer to the marked diminution in the number of cases of dietetic ailments such as colic, etc., and the health and therefore the capacity of the animals for work being very much improved. The molasses was sometimes fed clear from a trough and in other cases mixed with cut hay, or with crushed mealies including cob and shuck, as well as with rice bran and cotton seed meal. Dalrymple failed to note any injurious effects from feeding such large quantities of cane molasses, his observations being contrary to those of German and French investigations with beet molasses.

F. G. Helyar notes an improved appearance and an increase in spirit from feeding about one pound daily of cane molasses to both draught and driving horses. Lack of energy and a rough coat followed a discontinuance of its use. Helyar does not consider it advisable to feed molasses to horses which are in normal condition.

---

#### MOLASSES FOR PIGS.

---

It is generally stated that pigs can take and assimilate considerable quantities of molasses without suffering any ill effects, and that the molasses does not exert any digestion depression upon the other feed stuffs.

In order to corroborate the former fact, an experiment was made by the Massachusetts Station. Two pigs each weighing some 50 pounds were fed daily ration beginning September 21st, of 5 quarts of skim milk, 20 ounces of hominy meal and 2 ounces of Porto Rico molasses. The milk, meal and molasses were gradually increased until November 4th, when each pig was receiving daily 8 quarts of milk, 2 pounds of meal and about 14 ounces (425 grams) of molasses. At this date each animal was growing well (one weighing 110 pounds and the other 130 pounds) and show-

ing no bad effects from the molasses diet. This method of feeding was continued until January 10th, the amount of molasses being increased every few days, at which time each pig received daily 8 quarts of milk, 40 ounces of meal and 67 ounces of molasses (2,000 grams). It then appeared that an excess of molasses was being fed; the animals breathed short, their hair appeared rough and the skin quite dark in colour as though the circulation was poor. On January 22nd, they weighed 237 pounds and 266 pounds, but it was apparent that they were receiving a noticeable excess of the molasses and were not assimilating it. The amount was therefore reduced to 57 ounces daily (1,600 grams) and the hominy meal increased. The animals immediately improved and their general condition remained satisfactory until they were slaughtered February 12th. It was not possible to detect any abnormal condition of their internal organs, nor to their dressed carcasses. No particular study was made relative to the quantity or chemical composition of the fat. It was noted that neither of the animals was excessively fat.

The above trial simply confirms the claim that pigs can take comparatively large amounts of cane molasses without trouble. It is necessary, however, to begin with small amounts and increase slowly every few days. On the appearance of any bad effects such as disturbed circulation manifesting itself in a dark colour of the skin and shortness of breath, the quantity should be reduced. The animals consumed daily without apparent trouble nearly 1.5 pounds of cane molasses for each 100 pounds of live weight, but this quantity is believed to be excessive for long periods. Kellner states that fattening swine can take daily without ill effects 0.5 pound of beet molasses per 100 pounds live weight.

A number of German experiments are reported in which molasses and blood or meat meal and molasses were used as substitutes or partial substitutes for maize, barley and rye meals. The gain in live weight, while in some cases not quite equal to that produced by the several cereals, was on the whole satisfactory. J. Klein states that one kilo of a mixture of barley and mealie meal (fed together with 105 grams of meat meal) produced an average, as large an increase in live weight as 1.21 kilos of molasses (*i.e.*, molasses had 85 per cent. of the feeding value of these cereals). Klein recommends mixing the molasses with palm-nut meal rich in protein.

Danish experiments conducted by Fjord method show substantially equal results from the same amount of barley, rye, wheat and mealie meals, and from molasses; also that one part by weight of these several feeds proved equal in feeding value to six parts by weight of skim milk and twelve parts by weight of whey. The fat produced by corn was of inferior quality (soft and oily), but was improved by other grains and by molasses.



Maereker states that in the case of pigs, molasses fed in combination with peat (Torfmelasse) gives the best results, the faeces excreted being in excellent mechanical condition and free from the odour of butyric acid. One pound of this feed stuff can be given daily per 100 pounds live weight. Lehmann secured poor results when molasses was fed together with sour milk.

Forristall reports quite satisfactory results from the following mixture for growing and fattening pigs: Fifty pounds of low grade wheat flour were stirred into a barrel of water and the mixture steamed for an hour or two until it was well thickened; a gallon of molasses was then added.

---

Cocks that are good growers should always be selected, as it is asserted that they develop best and are healthiest.

---

Professor Koch has ascertained that there is a distinct connection between crocodiles and sleeping sickness caused by trypanosomae. Wherever crocodiles are found the disease may be discovered, but only in places near the banks. The blood of crocodiles forms the chief nourishment of the *Glossina palpalis*, which sucks the blood between the plates of the animal's hide. The extermination of the *Glossina* is impossible, but the same end may be reached by destroying the crocodiles or by the removal of the bushes and undergrowth where the animals lurk.—*Entomological News*.

---

Arbor Day was originated in America, 1872, by the Nebraska State Board of Agriculture, at the instance of Mr. J. Sterling Morton, and from its inception has been remarkably successful. Throughout the United States, Arbor Day is now systematically observed, and through the active co-operation of the schools, colleges, and universities, a great interest in tree planting has been fostered and a wonderful success achieved. In many States Arbor Day is a recognised public holiday. It has been officially recorded that the inauguration of this movement by Mr. Morton has done more for the protection of forests, and the encouragement of tree planting, than all the legislation that has been enacted in connection with this question.

## Natal Tea and Its Cultivation.

By E. R. SAWER, Director Experiment Stations.

THE oversea export of Natal teas to the quantity of more than half-a-million pounds during the year 1907 marks a new era in the local history of the industry, and, if further encouragement were needed by planters, it would surely be found in a report recently received from the Director of the Imperial Institute. As a direct result of the latter, the West India Produce Association has now placed Natal tea on sale in London, where its merits, as demonstrated by careful investigation, are securing due appreciation. The principal object of an examination of samples taken from specimens exhibited in the Natal Court of the Imperial Institute, and from supplies forwarded to the recent South African Products Exhibition in London, was the establishment of a comparison between teas from our Colony and those furnished by India, China and Ceylon. The results of this examination are shown in the following table:—

PERCENTAGES ON MATERIAL DRIED AT 100° C.

| Estate.            | Description.    | Moisture. | Ash. | Extract.†            | Caffeine.            | Tannin.‡ |
|--------------------|-----------------|-----------|------|----------------------|----------------------|----------|
| <i>Natal Teas.</i> |                 |           |      |                      |                      |          |
| Kearney            | Grade 1* ...    | 9·1       | 5·8  | 26·1                 | 3·9                  | 7·8      |
| do                 | Grade 2* ...    | 7·6       | 5·6  | 28·8                 | 3·6                  | 6·3      |
| do                 | Grade 3* ...    | 7·4       | 5·2  | 27·4                 | 3·1                  | 6·7      |
| do                 | Grade 4* ...    | 8·7       | 5·9  | 25·0                 | 3·4                  | 6·8      |
| do                 | Flowery Pekoe   | 7·6       | 5·1  | Not deter-<br>mined. | Not deter-<br>mined. | 7·0      |
| do                 | Broken Pekoe... | 6·9       | 5·8  | Not deter-<br>mined. | Not deter-<br>mined. | 7·3      |
| Barnsdale          | Pekoe ...       | 5·96      | 5·8  | 26·2                 | 4·8                  | 10·5     |
| Clifton            | Pekoe ...       | 6·2       | 4·8  | 31·4                 | Not deter-<br>mined. | 13·0     |
| Barnsdale          | Golden Pekoe... | 5·5       | 5·5  | 28·0                 | 4·4                  | 11·5     |
| Barnsdale          | Flowery Pekoe   | 6·1       | 5·3  | 27·0                 | 4·2                  | 11·6     |
| Aroma              | Pekoe Souchong  | 7·1       | 5·5  | 24·3                 | 4·0                  | 10·4     |
| do                 | Fine Natal ...  | 8·0       | 5·0  | 20·9                 | 4·1                  | 10·1     |
| Barrow Green       | Souchong ...    | 7·7       | 5·2  | 33·0                 | 4·4                  | 10·8     |
| Average ...        |                 | 7·1       | 5·4  | 27·1                 | 4·0                  | 9·2      |

PERCENTAGES ON MATERIAL DRIED AT 100° C.—*Continued.*

|                                      | Moisture | Ash. | Extract.† | Caffeine. | Tannin.‡ |
|--------------------------------------|----------|------|-----------|-----------|----------|
| <i>Indian Teas (13 Samples).</i>     |          |      |           |           |          |
| Maximum ... ..                       | 7.8      | 6.9  | 35.2      | 4.1       | 11.1     |
| Minimum ... ..                       | 6.4      | 5.4  | 27.4      | 3.6       | 6.9      |
| Average ... ..                       | 7.1      | 6.0  | 31.7      | 3.8       | 9.2      |
| <i>China Teas (8 samples).</i>       |          |      |           |           |          |
| Maximum ... ..                       | 9.2      | 8.2  | 27.2      | 3.7       | 9.3      |
| Minimum ... ..                       | 7.1      | 6.0  | 19.0      | 2.6       | 3.3      |
| Average ... ..                       | 8.2      | 6.8  | 24.3      | 3.0       | 5.2      |
| <i>Ceylon Green Tea (2 samples).</i> |          |      |           |           |          |
| No. 1 ... ..                         | 6.7      | 2.6  | 24.5      | 2.9       | 14.5     |
| No. 2 ... ..                         | 6.2      | 5.0  | 35.0      | 2.9       | 16.6     |
| Average ... ..                       | 6.5      | 3.8  | 29.7      | 2.9       | 15.5     |

\* These four samples were taken from specimens in the Natal Court of the Imperial Institute; the remainder were from the South African Produce Exhibition.

† "Extractive matter," or "extract" is the percentage of the tea dissolved by treating a given quantity of the tea with one hundred times its weight of boiling water, and allowing it to infuse for ten minutes.

‡ No method for the estimation of the tannin capable of distinguishing between real tannin and several closely related substances which occur in plants has yet been devised, and in the present instance the results given under this head have been obtained by the use of Proctor's modification of Lowenthal's process which is in general use for the determination of "tannin" and tannin-like substances in tea. The figures given, though subject to this qualification, are of comparative value as indicating the relative astringencies of the teas under comparison.

## CONCLUSIONS.

A consideration of the foregoing analytical figures shows that these Natal teas may be divided into two groups, which differ considerably in composition: (1) those from the Kearsney Estate, and (2) those from all other sources.

The specimens from the Kearsney Estate, grades 1 to 4, were all good black-looking teas, containing from 3.1 to 3.9 per cent. of caffeine and from 6.3 to 7.8 per cent. of tannin. The other two specimens of "Flowery Pekoe" and "Broken Pekoe" from the same source also contained a low percentage of tannin, viz., 7.0 and 7.3 per cent. These figures must be regarded as very satisfactory since the average percentage of caffeine (3.5)



is only a little below the amount present in the Indian teas examined, and on the other hand the average amount of tannin (7 per cent.) is considerably lower. In respect of the percentage of tannin these teas from the Kearsney Estate are intermediate between the Indian and China teas. The amount of extractive matter is also less than in the Indian teas and approximates to that of the China samples.

As is well known, it is the caffeine to which the valuable stimulating properties of tea are due, whilst the presence of much tannin is generally considered to be detrimental.

The other group of Natal teas, comprising all the remaining specimens, is characterised by unusually high percentages of caffeine and tannin. The amount of caffeine ranges from 4.0 to 4.8 per cent., with an average of 4.3 per cent., whilst the percentages of tannin vary from 10.1 to 13.0, with an average of 11.1 per cent. The abnormal amount of tannin (13 per cent.) present in the Pekoe tea from the Clifton Estate is probably due to the fact that the sample had not been properly fermented and was more or less green. So far as the amount of extractive matter is concerned this group agrees closely with the Kearsney teas.

The difference in the figures furnished by these two groups of specimens is very striking and may be due to some modification in the processes of manufacture.

It was to be expected that Natal tea would show a general similarity to Indian tea, since the original seed was obtained from Assam. This similarity can be seen in the figures for the majority of the specimens and in the average results, but in the case of the Kearsney teas the small percentages of extractive matter and tannin approximate more nearly to those obtained for China teas.

These results show that the cultivation of tea in Natal and its preparation deserve very full study with a view to the production of a tea of characteristic quality. The best of these teas combine the superior qualities of the teas of China and India.

The above report lends an additional interest to an earlier published account of the same exhibits contributed by the tea expert of *Tropical Life* to his journal. Thinking that a comparison of the product with that of India and Ceylon might prove of interest he paid a visit to the Exhibition and drew tasting samples from the exhibits there. He obtained specimens from three estates, and was much struck by "the marked improvement" which has taken place in the make of the leaf since he last saw teas from this Colony; "indeed," he says, "they now bear favourable comparison in this respect with other British growths." One of the estates, especially, he remarks, merits commendation, for the leaf is of good size and tip, well made and finished, showing signs of great care in manufacture. "It is when coming to the liquors that one finds cause for disappointment,"

he continues. "The 'infused leaf' in all cases is too uneven in colour, brown mixed with green and occasionally blackish leaves, evidence of imperfect fermentation, leaving the liquors either too thin, as with Barnesdale teas, or too soft and flavourless, as with those from the other two estates. The Barnesdales were pale yellowish in cup, with a flavour similar to China moyunes, but which might be prejudicial to their sale on the London market. Were it not for this peculiarity they would be very similar in style and quality to some of the best that come from Nilgiri, in Southern India. The defects are such as can be easily remedied, and planters in the Colony are to be heartily congratulated on the success which is attending their efforts to improve the character of their output. Should the time ever come when the industry is sufficiently extended to allow Natal to export part of her crop, the teas will receive in London the consideration they deserve." Mr. Sim, in his report on Natal tea, says: "This came as a surprise alike to Mincing Lane men and to the public. They had not previously heard of Natal tea, and were exceedingly surprised at the quantity produced, and at the progress the industry is making. And though, as critics, they naturally felt themselves bound to express criticism on the product submitted, and to point out rather its faults and shortcomings than its perfection, they all admitted that the product was inherently first-rate, but that the treatment accorded was not quite that to which London was accustomed. Further, they appeared to agree with so many degrees of classification as were represented from Natal it would be useless to attempt bringing Natal tea before the public under that name unless many thousand tons of each grade were available, its present use being rather for blending with other teas so as to produce a uniform quality maintainable in quantity at all times. This then involves selling bulk into the hands of blenders rather than the establishment of agencies at which the maintenance of an adequate supply of any brand would be a difficult matter at present."

### TEA SOILS IN NATAL.

The concluding paragraph of the Imperial Institute report urges the desirability of a very full and careful study of the cultivation and preparation of tea in Natal. This has been to an extent anticipated by a comparative examination of the more representative tea soils of both north and south coasts, and much useful information has been secured. In all, twelve carefully selected samples, typical of tea gardens of different ages, have been brought under review.

Sample I.: Surface soil taken from the immediate vicinity of a poor tea plant, showing every sign of depreciation in growth and colouration and carrying yellow foliage. Barnsdale Estate, Ifafa.

Sample II.: Subsoil of the above taken to a depth of 20 inches.

Sample III.: Surface soil from the immediate vicinity of a healthy flourishing tea plant with dark foliage. Barnsdale Estate.

Sample IV.: Subsoil of the above taken to a depth of 20 inches.

Sample V.: From an old garden of red soil which had been for 24 years under tea, and received one ton of bone meal 8 years ago. The flush is still good, but the weight poor. Clifton Tea Estate, Kearsney.

Sample VI.: From a garden of similar age and character to the above, which received four truck-loads of kraal manure per acre during the last 20 years. Clifton Estates.

Sample VII.: From a garden of red soil, which has been under tea for 20 years. Clifton Estates.

Sample VIII.: New sandy soil recently planted to tea. Clifton Estates.

Sample IX.: New red soil above diorite, recently planted to tea. Clifton Estates.

Sample X.: New sandy soil. Unplanted. Clifton Estates.

Sample XI.: Sandy soil manured with cow-peas three years ago. Clifton Estates.

Sample XII.: Best tea soil on the estate, for thirteen years under tea without manure. Clifton Estates.

|                                | I.   | II.   | III. | IV.  | V.   | VI.  | VII.  | VIII. | IX.   | X.   | XI.  | XII. |
|--------------------------------|------|-------|------|------|------|------|-------|-------|-------|------|------|------|
| Moisture ...                   | 4·87 | 11·24 | 5·78 | 4·25 | 0·73 | 0·52 | 3·50  | 1·91  | 7·12  | 2·56 | 0·95 | 1·72 |
| Organic & Vol-<br>atile Matter | 8·30 | 7·10  | 6·71 | 4·20 | 1·74 | 1·25 | 8·42  | 4·48  | 8·45  | 4·87 | 2·32 | 3·66 |
| Phosphoric Acid                | 0·03 | 0·04  | 0·02 | 0·05 | 0·01 | 0·12 | 0·05  | 0·02  | 0·66  | 0·04 | 0·02 | 0·01 |
| Potash ...                     | 0·22 | 0·20  | 0·12 | 0·11 | 0·12 | 0·17 | 0·15  | 0·13  | 0·12  | 0·13 | 0·19 | 0·20 |
| Lime ...                       | 0·25 | 0·15  | 0·13 | 0·10 | 0·20 | 0·01 | 0·01  | 0·10  | 0·26  | 0·02 | 0·05 | 0·05 |
| Magnesia ...                   | 0·21 | 0·42  | 0·10 | 0·05 | 0·01 | 0·06 | 0·04  | 0·04  | 0·31  | 0·08 | 0·01 | 0·05 |
| Iron & Alumina                 | 9·64 | 18·50 | 6·63 | 5·32 | 1·65 | 1·43 | 12·67 | 4·98  | 18·60 | 6·96 | 0·79 | 2·75 |

SOLUBLE IN WEAK CITRIC ACID.

|                           | I.     | II.    | III.   | IV.    |
|---------------------------|--------|--------|--------|--------|
| Phosphoric Acid . . . . . | 0·0038 | 0·0005 | 0·0031 | 0·0015 |
| Potash . . . . .          | 0·0180 | 0·0064 | 0·0098 | 0·0080 |
| Humus . . . . .           | 1·72   | 0·80   | 3·62   | 2·44   |

When examining the above results of a purely chemical examination of these tea soils, the following considerations should be borne in mind:—

1. The ash of tea leaves contains about 20 per cent. phosphoric acid and 38 per cent. potash, or, in all, 58 per cent., or over half its weight of



these two constituents, and constant cropping over a number of years inevitably spells an extensive drain upon the available supplies of these substances.

2. Organic matter, and the humus derived from its decomposition, are the sources of organic nitrogen, and the latter substance is essential to healthy growth. The addition of green manure, besides furnishing an actual source of plant food, assists in the release of fertilising matter present in a fixed or unavailable form, and exercises a beneficial influence on the moisture and mechanical condition of the soil.

3. Salts of iron, especially when present in excess, exercise a fixing action of the fertilising ingredients present in the soil, while, on the other hand, lime releases or renders these available for the use of plants. The following deductions, amongst others, may therefore be drawn from the results of chemical analysis:—

- (a) Many of these soils would benefit largely from the addition of organic matter in the form of green manure. In the case of the soil represented by Samples I. and II., the amount of humus falls very low, and an insufficiency of organic nitrogen may account for the unhealthy, yellow colouration of the tea-plants growing therein. There would appear to be a progressive exhaustion of organic matter and humus in the older tea gardens, as represented by Samples V., VI., VIII. and XII.
- (b) Phosphoric acid in all samples is very low, if not deficient, and should be supplemented by the use of a phosphatic manure. When cost of carriage is not prohibitive the employment of basic slag is to be recommended as an alternative to superphosphate, as the former contains a considerable proportion of lime, which will later be shown to be a desirable addition in the case at least of red soils.
- (c) Potash is better represented in the majority of samples. In view, however, of the large demands made by the crop on this constituent, there would appear to be every probability that a profit could be shown on the use of a potash manure.
- (d) Of the quantities of phosphoric acid and potash present in the red soils represented by Samples I.-IV., it will be seen that a very small proportion is available for the use of the plants as indicated by their solubility in weak citric acid. This result is to be attributed to the presence of considerable quantities of iron, and may be rectified to a certain extent by a dressing of lime. Speaking generally, when a high iron content is accompanied by a low return of soil lime, the latter should be artificially supplemented. Soils

represented by Samples VIII., X. and XI., being sandy in character, contain little iron, while that represented by Sample IX., derived from diorite, is highly ferruginous. The merit of the superiority of the soil represented by Samples III. and IV. over that from which Samples I. and II. were taken, was found to exist, not in relative chemical composition, but in mechanical and physical properties. An earlier report by the Analyst lays stress on the importance of these features as determining factors of the value of soils for tea culture.

"Even a superficial observation was sufficient to detect differences in the appearance of these soils. Nos. 3 and 4 had a nice friable feel and were dark in colour, No. 1 was somewhat lighter in colour due probably to its lesser amount of organic matter, while No. 2 (the subsoil of No. 1) was altogether different in colour, grain and general appearance, seeming to be purely oxidised and much disintegrated ironstone mixed with clay and almost devoid of organic matter. When placed under the influence of water the pieces of ferruginous material of which it consisted were partly broken down into a greasy yet gritty mass.

"Further investigation of the physical and mechanical conditions of the soils fulfilled a promised interest in that they showed variations quite equal to those portrayed in the chemical comparison. They were separated by mechanical means into their various grades or sizes of soil particles and the percentage of each ascertained. These were as follows:—

|                            | I.     | II.    | III.   | IV.    |
|----------------------------|--------|--------|--------|--------|
| Stones . . . . .           | 1.62   | 26.66  | —      | —      |
| Fine Gravel . . . . .      | 8.24   | 13.95  | 3.22   | 6.62   |
| Coarse Sand . . . . .      | 31.05  | 29.09  | 32.05  | 39.29  |
| Fine Sand . . . . .        | 29.72  | 17.93  | 29.46  | 26.72  |
| Silt . . . . .             | 12.09  | 3.26   | 11.92  | 11.94  |
| Fine Silt . . . . .        | 6.84   | 1.27   | 11.21  | 8.48   |
| Clay . . . . .             | 1.44   | 0.54   | 4.02   | 2.08   |
| Loss on Ignition . . . . . | 9.00   | 7.30   | 8.12   | 4.87   |
|                            | 100.00 | 100.00 | 100.00 | 100.00 |

"There is a close resemblance throughout between Nos. 1, 3 and 4. In No. 1 the proportions of finer materials are somewhat smaller, but in No. 2 the coarser particles distinctly predominate, and from fine sand downwards the contrast is very marked. The presence of a good supply of the finer portions of a soil is important to plant growth, and the unsatisfactory condition of No. 2 in this respect must necessarily operate against its ability to function as a good growing medium.

"The drainage in Nos. 3 and 4 was very free, especially in the sub-soil, but in No. 2 contact between the dry soil and the water caused a swelling and disintegration of the material, with subsequent delay in the passage of the water through the mass.

"Another difference between No. 2 and the other soils was displayed in their comparative powers of capillary attraction. The rise of water in specified periods of time in the field samples was found to be—

|                       | I.   | II.  | III. | IV.          |
|-----------------------|------|------|------|--------------|
| In 6 hours . . . . .  | 8.3  | 6.5  | 8.9  | 7.1 inches.  |
| In 24 hours . . . . . | 10.5 | 8.2  | 11.0 | 9.9 inches.  |
| In 72 hours . . . . . | 13.5 | 10.0 | 12.3 | 12.5 inches. |

showing that at the end of each period No. 2 lagged behind the others. This capillary power is influenced by the size of the soil particles, and the amount of organic matter present, and in the above experiment the results are in agreement with the facts previously ascertained. Capillarity has to do with the passage of water through the soil, and in this respect it is important in tapping the large supply of underground water which can permeate upwards through the soil until it reaches the surface layers in which the plant roots are established, and thus provide them with a source of moisture apart from that failing naturally on the surface.

"The proportionate water capacity of these soils was found to be approximately in cubic centimetres per cent. 37.50, 39.05, 39.80, and 44.30, which means that 10 lbs. each of the respective soils held when saturated with water 3.7, 3.8, 3.9, and 4.4 lbs. of water. This property is due in part to the size of the soil particles, but to a greater extent to the amount of organic matter present. There is less variation shown in this respect among the soils, but the capacity of No. 2 appears to be governed by different properties than are displayed in either of the others."

The initial selection of soils for tea gardens with reference to their mechanical and physical properties, to include special regard to the nature of the subsoil, is to be supplemented by a regular system of soil renovation. Liming, as a means of rendering available existing soil resources, should be followed by regular, if not annual, dressings of a phosphatic manure to which a smaller quantity of potash may be profitably added, while every five or six years should see the garden placed under a green crop, preferably of a leguminous character, as a source of humus and organic nitrogen. By such means it should be possible to maintain, if not increase, the fertility of the land, and obviate loss in weight of succeeding crops as a result of soil deterioration, which is only too commonly reported.

*(To be continued.)*







SISAL CULTIVATION.

Plants growing at Mr. W. J. Bell's nurseries in the Town Bush Valley.

## **Sisal Cultivation in Natal.**

### MAJOR SILBURN'S VIEWS.

IN this issue we publish several illustrations illustrative of fibre cultivation which should prove of interest to those who contemplate giving some attention to this industry. For these illustrations, with the exception of the one depicting sisal plants growing at Mr. W. J. Bell's Nurseries in the Town Bush Valley, Pietermaritzburg, we are indebted to the *Agricultural Gazette* of New South Wales.

According to Mr. W. J. Bell's experience the agave does very well even in the midlands of Natal; and the plants which a representative of the *Journal* saw at his place, towards the end of last month, looked particularly healthy. As will be seen in the illustration, two of these plants have now thrown up poles, bearing a number of bulbils ready for planting. Mr. Bell is prepared to dispose of these bulbils at £4 per thousand; but as the supply is limited we advise those desirous of securing a number to make immediate application to Mr. Bell.

Major P. A. Silburn, M.L.A., has sent us some notes on the fibre industry, which, with the local experience he has had, should prove of particular interest to those of our readers who are seriously thinking of going in for fibre growing. In prefacing his remarks, Major Silburn says: "As I have been somewhat closely connected with this industry during the last two and a half years, and was responsible for manufacturing the shipments of fibre that have been sent to the European markets during that period, the data collected by me may be of some slight value to those gentlemen who have not been discouraged by the failure of the concern with which I was originally connected."

Major Silburn then goes on to say:—

Upon commencing to manufacture fibre two and a half years ago at Port Shepstone on plantations that had then been planted some ten years, and which showed various stages of growth, I was confronted with the difficulty of having no data with which to meet the conditions of climate, soil, rainfall, nor was there any reliable information as to yield per acre, percentage of dry fibre to green leaf, or period of growth; all this had to be obtained by experience. A certain number of so-called experts stated that the *Eurcraea gigantea* gave a better yield of fibre if grown in poor soil, and this erroneous theory had evidently been acted upon by those who originally planted at Port Shepstone estate, for though there was rich soil available in these farms, the poorer parts were first selected.



Then, too, it was contended that the plant being of a hardy nature required no cultivation, would thrive under any conditions, and might be cut as often as leaves were required for the mill.

Very little experience was required to discover that all these theories were entirely wrong. Having no local data to guide me, I placed myself in communication with Yucatan, the Bahamas and Mauritius, as being the largest exporters of hard fibres, and before giving my own experience under local conditions, I will give a short description of the industry in those countries as obtained by correspondence.

#### YUCATAN.

The soil in the fibre-producing district of Yucatan is gravelly and stoney, and varies in colour, being black, brown and red, and has an average depth of 8 inches underlaid by soft limestone rock. The Henequen and Bahama hemp (Sisal) are the hardiest of all the Agaves. Their power to withstand drought is almost incredible. It has never been known for these plants to be troubled with any disease, no fungus or insect can apparently damage or effect them; and in 1883 when the locust devastated the State of Yucatan the cattle and birds died of starvation, and men were on the eve of despair, the only green living thing to be seen were the different species of Agaves, and they are now looked upon as the salvation of the State. Although not apparently subjected to disease and capable of resisting a drought of 11 months in 12, the plant is not altogether free from sudden changes of heat and cold, and is liable to be damaged by floods of rain immediately after a long drought if accompanied by sudden fall of temperature.

#### MACHINES.

There are several kinds of machines used for extracting the fibre on the different estates. Those cleaning less than 75,000 leaves per day use the large common wheels, Raspador and Barraclough, and those cleaning from 80,000 to 120,000 per day use the larger and more complicated machines, the Prieto, Villamore, Weicher, Todd, and Finnigan abrieskie. The Prieto machine is manufactured by Unig & Nerge, Barcelona, Spain; requires a 16-h.p. engine and the services of two men and a boy, capacity 7,000 lbs. dry fibre per day of 10 hours, cost 4,500 dollars.

The Villamore machine made by Krijewski & Pesant, 35, Broadway, New York, requires a 15-h.p. engine and the services of two men and a boy, capacity 6,000 lbs. of dry fibre per day of 10 hours. Frame made of wood, cost 500 dollars.

#### PRESS.

Most of the small estates use small screw presses baling from 3 to 8 bales daily. The large estates baling 16 to 30 bales daily use hydraulic presses.



SISAL CULTIVATION.  
Showing how the leaves are cut.





## ESTATES.

There are 200 fibre estates in Yucatan, varying from 50 to 28,000 acres in extent, having a total number of 105,000 acres under cultivation, employing 12,000 Indian labourers. The largest of these estates employ locomotives for hauling in the crops from the fields.

Estates with less than 800 acres under cultivation erect 1 Raspador for every 100 acres.

## PLANTATIONS.

These are laid out in fields or sections of 50 to 200 acres, and contain from 600 to 900 plants to the acre. The plants are "set out" on the different estates at various distances, usually 6 feet by 9 feet. The yield of dry fibre from an acre is from 1,000 to 1,470 lbs. per annum. The number of plants usually "set out" in an acre is 650, giving an average of 33 leaves from each plant, and from 50 to 70 lbs. of clean fibre to the 1,000 leaves, making an average calculation of 650 plants to the acre, 33 leaves from each plant yielding 60 lbs. of fibre to the 1,000 leaves, the return would be as follows:— $33 \times 160$ , equals 21,450 leaves, yielding  $60 \times 21,450$ —1,000 equals 1,287 lbs. clean fibre per annum. The planters never speak doubtfully of their returns as experience shows them that their crops can be relied on with almost complete certainty.

## CUTTING.

To neglect cutting the leaves after the plant is matured retards its growth which causes it to "pole" at the appearance of which the life of the plant is ended. When the cutting is regularly attended to the life of the plant is prolonged, the plant will produce a greater number of leaves and fibre of a greater length and superior quality. The plant is cut every three months, when seven to nine leaves are gathered. The leaf is taken from the plant with a clean cut. Nature's signal for cutting is when the leaf has dropped to an angle of 45 degrees.

For the year 1905-6, Mexico exported from the Yucatan States fibre to the value of 29,389,128 dollars.

## THE BAHAMAS.

The fibre industry was started in the Bahamas in 1888, and was pushed forward by the then Governor, Sir Ambrose Shea. The plant there used is the Agave Sisalana. This plant has doubtless reached the Bahamas from Florida and Key West. According to a Kew Garden report, it is said to be the best fibre plant amongst known species of Agaves and Furcraeas. Parties from Great Britain, Canda, and Newfoundland, representing large resources, are interested in Sisal, have bought tens of thousands of Government land, and are industriously engaged in clearing and planting the same to the full measure of their ability to procure

the material. For the year 1905-06 the Bahamas exported £30,000 of fibre.

### MAURITIUS.

The hemp industry was started in the Mauritius to utilise the large numbers of plants of *Furcraea gigantea*, Vent., which had spontaneously established themselves on the low-lying lands near the sea coast. This is one of the oldest and best-known species of *Furcraea*, and is now universally spread throughout tropical America, India, Ceylon, Mauritius, East, South-east and West Africa, and is common in Natal.

According to a Kew Gardens report the average yield per acre per annum in Mauritius is  $1\frac{1}{2}$  tons, and proportion of dry fibre to green leaf, 3 per cent.

I will now quote extracts from M. de Chzal's report submitted to the Colonial Office on the fibre industry of Mauritius.

"The yield of dry fibre in relation to green leaf varies according to the age of leaves and characteristics of the season. The riper the leaves the larger the yield of fibre; a wet season producing leaves charged with moisture will also affect the result. To produce a ton of dry fibre ready for shipment requires from 80,000 to 150,000 leaves, varying according to the size and age of the leaves and character of season. The machine used is of local manufacture, and is known as the Gratte. This consists of a drum 2 feet in diameter and 1 foot wide. On the circumference of this are bolted 2-inch L-shaped blades parallel to the axis. The drum is mounted upon an axle and made to revolve with great rapidity close to and against the front or edge of a feed table (servante). The drum should be turned at an average rate of 700 revolutions per minute; two men usually work at each machine. It may be assumed that a set of 10 to 12 machines, properly installed and attended by men accustomed to the work will turn out on an average about 1,200 kilos (2,645 lbs.) of dry fibre per day.

"There are not up to the present any regularly planted estates on the Island. The lands upon which the aloes grow are mostly in the hands of the coolies, who cut and sell the green leaf to the small mills."

### FIBRE IN NATAL.

During the last thirty years attempts have been made to establish the industry in Natal. The *Furcraea gigantea* appears to have been introduced here from Mauritius some thirty years ago, and has since then spread along the coast lands. Ten years ago the first serious attempt was made outside Port Shepstone, when a Mr. Watt laid out some plantations there and encouraged the settlers to plant small areas. A mill and machinery was erected. On Mr. Watt dying before the plants were matured the estate was neglected, and the plantations annually burnt out by grass fires. Some two years ago I took over the estate on behalf of a Johannesburg syndicate,



### SISAL CULTIVATION.

View of a plantation after cutting, showing how all the *upright* leaves are left,





reclaimed the then neglected plantations, and planted the richer portions of the estate.

The machinery was of varied types, and after testing these I reported in favour of an improved Todd automatic machine, known as the Finnigan Zabriskie, as this was reported as doing excellent work in Mexico and elsewhere. My first lesson by experience was given by the blizzard of May, 1905. This destroyed practically the whole crop by withering portions of each leaf. In ignorance I had the plants stripped of the leaves; this resulted in weakening the plants and keeping back the crop, for as a young leaf would separate from the heart, having no protection, the wind would snap it at the butt.

Lesson No. 2 was that the better the soil the better the result in every way, and my third lesson was that protection from wind is absolutely necessary.

I had not been at work long before I discovered that the question of profit or loss was solely decided by transport. Roughly, the leaf gives  $2\frac{1}{2}$  per cent. of dry fibre; it will therefore be seen that if the mill is at any distance from the plantations, and the roads bad, and the transport done by oxen, the carrying of 40 tons of green leaf for each ton of dry fibre is an expensive item. However, these were difficulties which as time went on would have been rectified by the laying of tram-lines, or the erection of machines in the plantations.

I very soon discovered that the Mexican system of cutting seven to nine leaves every three months was the correct one, as this did not sap the strength from the plant, gave greater protection to the younger leaves, and yielded a higher percentage of fibre.

#### YIELD PER ACRE.

My experience leads me to believe that anything over three-quarters of a ton of dry fibre per acre per annum would be abnormal. No doubt on very rich soil, from old and well developed plants, a larger yield would be obtained.

#### MANUFACTURE.

Two Finnigan-Zabriskie machines were installed. These machines are automatic, and though wasteful, cleaned the fibre well.

The following is an example of experiments made:—

October 23, 1906.

*Furcraea gigantea.*

|                              |                              |
|------------------------------|------------------------------|
| Weight of leaves, 200 lbs.   | Time feeding, 28.57 per min. |
| Number of leaves, 48.        | Wet fibre, 15 lbs.           |
| Weight per leaf, 4.16.       | Dry fibre, 5.25 lbs.         |
| Length of leaf, 5 ft. 6 in.  | Percentage to leaf, 2.56.    |
| Time feeding, 1 min. 45 sec. | Length of fibre, 4 ft. 9 in. |

November 17, 1906.

*Furcraea gigantea.*

|                                 |                                      |
|---------------------------------|--------------------------------------|
| Weight of leaves (194) 200 lbs. | Wet fibre, 21.25 lbs.                |
| Weight per leaf, 1.03 lb.       | Scutched fibre, 5 lbs.               |
| Length of leaf, 36 in.          | Percentage, $2\frac{1}{2}$ per cent. |
| Time feeding, 2 min. 46 sec.    | Length of fibre, 3 feet              |

November 17, 1906.

*Experiment with Sisal.*

|                                |                            |
|--------------------------------|----------------------------|
| Weight of leaf (255), 548 lbs. | Scutched fibre, 17 lbs.    |
| Wet fibre, 45 lbs.             | Percentage, 3.10 per cent. |
| Dry fibre, 18 lbs.             | Length of fibre, 5 feet.   |

The best result from the mill were obtained from the 10th October to the 17th November, 1906. Twenty-nine running days gave 36,019 lbs. of dressed fibre, and 2,708 lbs. of tow. The plantations cut during this period were 37 acres, or an approximate yield of 1,000 lbs. of fibre and 75 lbs. of tow per acre. Based on the results of the 29 days' continuous work done in October and November, the only period during which the mill was run with any sort of continuity, the costs, apart from the managerial and head office expenses and realisation charges, were as follows:—

|                                     | Per ton. |    |    |
|-------------------------------------|----------|----|----|
|                                     | £        | s. | d. |
| Cutting (30 hands) .. .. .          | 1        | 17 | 3  |
| Transport to mill (13 oxen) .. .. . | 2        | 13 | 0  |
| Manufacture .. .. .                 | 3        | 2  | 6  |
| Full .. .. .                        | 1        | 10 | 0  |
| Baling .. .. .                      | 0        | 12 | 0  |
| Transport to rail .. .. .           | 1        | 0  | 0  |
| Railage to Durban .. .. .           | 0        | 11 | 4  |
| Shipping charges .. .. .            | 0        | 5  | 0  |
| Insurance .. .. .                   | 0        | 3  | 0  |
| Freight to London .. .. .           | 1        | 13 | 0  |
|                                     | <hr/>    |    |    |
|                                     | £13      | 17 | 1  |

The price realised for the fibre shipped was £32 10s. and £13 for the tow per ton (the tow is the dry refuse from the scutcher).

For the benefit of those who fear any abnormal fluctuations in the fibre market, I will give the average price of fair quality hard fibre from 1879:—1879, £24; 1880, £27; 1881, £28; 1882, £28; 1883, £27; 1884, £21; 1885, £19; 1886, £21; 1887, £33; 1888, £37; 1889, £50; 1890, £30; 1891, £26. From 1891 to 1901 it has steadily risen to £36. The highest price was in March, 1889, viz., £56 10s.



## MARKET REPORTS.

The fibre as manufactured at Port Shepstone was shipped to different markets with the object of discovering those most payable and suitable; and I now give extracts from the reports received:—

## I.

Bostone & Firininger.

London, 25th July, 1906.

“Aloe fibre, extra fine, well cleaned, good length, strength, and good white colour. Rather towy ends. Value £34 per ton.”

## II.

T. Dobben & Co.

London, 5th December, 1906.

“A.1 mark was started at £24, and after very spirited bidding by the principal buyers realised £33 10s., or £3 10s. above reserve. This is a splendid fibre, and when the mark is better known will realise within a few pounds of fair current Neuville, or even as much if length can be increased without detriment to the colour; under other covers we have sent you the following samples:—South American fibre, sold here, 6th inst., for £38 10s. In strength and general appearance it is considered inferior to your A1, but the length influenced additional price.”

## III.

W. F. Malcolm & Co.

London, 7th December, 1906.

“W. F. M. & Co., 32 bales hemp. Packed in convenient-sized tied heads, chiefly good length, rather a bolder style of fibre than Mauritius, but hardly so bold as sample originally submitted. Very well cleaned, fibre bright and glossy with good white colour. Strength good and considerably better than Mauritius. The ends of the fibre spoil the appearance and detract largely from value of hemp, being all very ragged and towy. Value about £32 landed terms.

“W. F. M. & Co., 4 bales tow. Close matted tow, mostly short waste with a little long unscutched straw mixed, a very good colour, full of nap and dust. Value £13 to £14 per ton, landed terms.”

## IV.

Cox, McEuen & Co.

London, 1st March, 1907.

“With reference to the sample of Furcraea fibre, we value same at about £32 to £36, and any shipment to this country will find a ready market, no matter how large the quantity.

## V.

Handel, Svereeniging.

Amsterdam, 31st August, 1906.

“We have also received the advised sample. We find the quality nicely white, but not very strong and not very well cleaned. We should say that this fibre values £40 per ton, C.I.F.”

## VI.

Plymouth Cordage Co.

North Plymouth, 1st March, 1907.

"As requested, we are sending you a piece of the rope made from the Natal fibre. We shall be quite curious to know how the rope answers for transmission purposes, and the result after you have run same in a drive a sufficient length of time to decide the merits of the rope. The market value of this fibre would naturally be governed very largely by the price of other fibres, say Mexican, Sisal and Manilla. The former is being quoted at a lower rate now than it was when we suggested 8 cents per lb. as a proper price for the fibre you sent. We enclose cheque for £327 as per enclosed statement, which please sign and return (equals 8 cents per lb.)"

Pollitzer &amp; Co.

## VII.

Durban, 24th June, 1907.

"We are in receipt of a cable from our Home friends in which they ask us whether we can make a firm offer for 150 bales fibre monthly, quality equal to samples of last 5 bales sent them, at £28 per ton of 2,240 lbs. nett weight, c.i.f. European port."

## VIII.

6th February, 1907.

"For the five bales realised in Holland £30 was obtained. The buyers of those five bales who have worked it in their factory are very satisfied with its quality, which, however, cannot be said of the condition in which it has been shipped."

It is for the reader to judge for himself from the above information as to whether the industry is a paying one for this Colony. It must not be forgotten that all the paying industries of the world have been built on failures, and that the pioneers come in for more abuse than praise from those who actually benefit. But, personally, I have no doubt that fibre will be a great success on the coast lands of Natal and Zululand. It is only now that experienced planters, such as Messrs. Claud Manning and Harper have devoted their attention to this plant.

Success lies in the plantations, not in the mill; the process of manufacture is simple, and, as an instance, I need only state that green leaves cut in the morning can be converted (providing the day is fine) into fibre and baled ready for London in the evening.

The industry is one for the small man with two or three hundred acres. For £250, machinery can be erected to treat ten tons per month; but care must be taken that the topography of the land selected for the plantations is such as will enable transport to be by gravitation.

To those who intend going in for the industry, believing the plant a weed requiring no attention, no cultivation, and giving an unlimited yield of fibre per acre, I predict rapid failure; but to those who, like the planters I have mentioned, conscientiously put their backs into it, and intelligently study local conditions, there is success not only for themselves but for the Colony.



**SISAL CULTIVATION.**

General view of a plantation, showing poles thrown up by some of the plants.





## **Cereals Under Irrigation.**

By E. R. SAWER, Director, Experiment Stations.

THE past winter at the Weenen Experiment Station has been largely devoted to a study of various factors connected with the cultivation of cereal crops under irrigation, and interesting and valuable results have been secured bearing on times of sowing, the benefits to be derived from the thorough drainage of irrigated lands, the optimum quantities of water to be applied, periods of development, and most suitable varieties for the climatic and soil conditions obtaining in the Weenen Valley.

Of particular interest are the results secured from the trial of a large number of wheats, of which three only have as yet warranted general adoption. The following is a digest of results secured from all plots yielding any considerable quantity of grain:—

| Variety.                 | Date Planted. | Date Harvested. | Yield of Grain<br>Per Acre.<br><i>Bushels.</i> |
|--------------------------|---------------|-----------------|------------------------------------------------|
| Menenieu (Italian)       | ... 22-5-07   | ... 14-11-07    | ... 27                                         |
| Barley Wheat...          | ... 22-5-07   | ... 15-10-07    | ... 21½                                        |
| Standard Fife (Canadian) | ... 4-6-07    | ... 14-12-07    | ... 12½                                        |
| Selina                   | ... 22-5-07   | ... 13-12-07    | ... 8½                                         |
| Wellman Fife (American)  | ... 23-5-07   | ... 13-12-07    | ... 8½                                         |
| Nicaragua                | ... 22-5-07   | ... 14-11-07    | ... 7                                          |
| Wellman Fife (Transvaal) | ... 24-5-07   | ... 13-12-07    | ... 2½                                         |

Manures applied per acre were 120 lbs. double superphosphate and 20 lbs. nitrate of potash drilled with seed, and a top-dressing of 80 lbs. nitrate of potash six weeks after seeding. Delay in delivery of seed postponed planting by five weeks, and yields would undoubtedly have been heavier in all cases, and particularly in that of the Standard Fife variety only planted in June, had it been possible to complete this operation, as originally intended, in the first fortnight of April. Consignments of the three first-named have been placed in Durban for the purpose of milling experiments, reports upon which it is hoped to publish in the next issue. A good sample of Red Standard Fife wheat is stated at the present time to be worth 11s. per 100 lbs. delivered in Durban.

*Menenieu Wheat.*—The field report on this type shows it to be a stout, leafy planting of vigorous growth standing 5 feet 1 inch in height when mature, and, in spite of lateness of season, little affected by rust

(35 per cent.) Development is rapid, ranking in this respect with the Central American variety, and surpassed only by the barley wheat. Bearded.

*Barley Wheat*.—Less stout than the above, and apt to lodge in high winds. This feature seriously diminished yield, which should otherwise have been very heavy. Growing period is short, the crop maturing in the middle of October. Almost free from rust (5 per cent.) Growth in height, 4 feet 2 inches. Bearded. Not a good bread type, but can be blended with stronger wheats.

*Standard Fife*.—A very vigorous, stout grower, almost free from rust in December (15 per cent.), lodging little or not at all even in high winds. Holds its grain well. Growth in height, 4 feet 3 inches. Semi-bearded. Excellent bread type. Planted in April should prove best of all varieties tried.

*Selina*.—A weak grower, fine-strawed and lodging in exposed positions. Colouration a light, yellowish green. Apparently little adapted to local conditions. Fairly rust-resistant (25 per cent.) Semi-bearded.

*Nicaragua*.—A strongly-growing, leafy type, with good resistance to rust (10 per cent.) Growth in height, 4 feet 9 inches. Yield very disappointing. A good bread wheat. Bearded.

*Wellman Fife*.—A strongly-growing type with somewhat scanty leaf-development. Does not lodge and holds grain well. Medium rust-resistance (15—20 per cent.) Yield very disappointing. Semi-bearded.

#### QUANTITIES OF WATER REQUIRED BY OATS, BARLEY AND RYE.

A second series of experiments with oats, barley and rye was directed to a determination of the optimum quantities of water for these crops. The specified leads were given fortnightly, from a time when the crop covered the ground, and it will be seen from the following statement that while there is little to choose between the results secured from a ten and a five inch lead of water in the case of the oats, the barley and rye uniformly benefit from the larger quantity of the water. Carefully constructed miner's inches were employed for this experiment and the quantities of water regulated by the time of flow allowed. The general principle that oats require more water than any other grain crop, excepting rice, may require modification in its application to local conditions, for barley of the Early Cape and Zero types would appear capable of deriving further benefit from a lead increased beyond the maximum of five inches, a supposition which will be made the subject of further experiments. The same remark would apparently apply to the rye crop, which though remarkably drought-hardy and capable of making healthy development through our dry season with irrigation, benefits markedly from a fortnightly lead of 4 inches of water, though in this case the yield of grain is less than that secured from dry lands.



During the earlier periods of growth oats are very dependent on a good supply of moisture. Success depends upon rapid development and no set-back. From the time the plants begin to head they should be almost continuously watered during dry weather. There is less danger of over-doing the irrigation in the case of this than of any other white-straw crop. In the case of barley water is most required when the grain is filling. It should, however, have a lead in any case when standing about six inches high to avoid premature heading.

| Plot. | Kind.  | Variety.         | Area of Plot. | Per Plot. |        | Date Planted. | Date Harvested. | Manures per Acre.           |                 |                  | Quantities of Water. |
|-------|--------|------------------|---------------|-----------|--------|---------------|-----------------|-----------------------------|-----------------|------------------|----------------------|
|       |        |                  |               | Forage.   | Grain. |               |                 | High Grade Superphosphates. | Muriate Potash. | Sulphate Ammonia |                      |
|       |        |                  | Acre          | lbs       | lbs    |               |                 | lbs                         | lbs             | lbs              | Lead                 |
| b     | Oats   | Indian           | $\frac{1}{4}$ | 1,419     | 309    | 4-5-07        | 14-10-07        | 120                         | 100             | 50               | 10 in.               |
| b     | do     | do               | $\frac{1}{4}$ | 1,498     | 341    | do            | do              | 120                         | 100             | 50               | 5 in.                |
| c     | Barley | Zero             | $\frac{1}{4}$ | —         | 254    | do            | 13-11-07        | 180                         | 200             | 100              | 5 in.                |
| c     | do     | do               | $\frac{1}{4}$ | —         | 201    | do            | do              | 180                         | 200             | 100              | 2½ in.               |
| d     | do     | Early Cape       | $\frac{1}{4}$ | —         | 401    | do            | 5-11-07         | 180                         | 200             | 100              | 5 in.                |
| d     | do     | do               | $\frac{1}{4}$ | —         | 380    | do            | do              | 180                         | 200             | 100              | 2½ in.               |
| e     | Oats   | Algerian         | $\frac{1}{8}$ | 1,086     | —      | 3-5-07        | 16-10-07        | 120                         | 100             | 50               | 10 in.               |
| e     | do     | do               | $\frac{1}{8}$ | 957       | —      | do            | do              | 120                         | 100             | 50               | 5 in.                |
| e     | do     | do               | $\frac{1}{8}$ | —         | 178    | do            | 5-11-07         | 120                         | 100             | 50               | 10 in.               |
| e     | do     | do               | $\frac{1}{8}$ | —         | 173    | do            | do              | 120                         | 100             | 50               | 5 in.                |
| f     | do     | do               | $\frac{1}{8}$ | 798       | —      | do            | 16-10-07        | 120                         | 100             | 50               | 10 in.               |
| f     | do     | do               | $\frac{1}{8}$ | 722       | —      | do            | do              | 120                         | 100             | 50               | 5 in.                |
| f     | do     | do               | $\frac{1}{8}$ | —         | 108    | do            | 5-11-07         | 120                         | 100             | 50               | 10 in.               |
| f     | do     | do               | $\frac{1}{8}$ | —         | 187    | do            | do              | 120                         | 100             | 50               | 5 in.                |
| g     | Rye    | Winter of Naples | $\frac{1}{4}$ | 1,240     | 190    | do            | 25-11-08        | 60                          | 100             | 50               | 4 in.                |
| g     | do     | do               | $\frac{1}{4}$ | 871       | 118    | do            | do              | 60                          | 100             | 50               | 2 in.                |

The following table shows in graphic form the advantages derived from thorough under-drainage of irrigated lands. Apart from increased yields, a danger of alkaline accumulation is obviated, which has been

responsible at Weenen for at best the temporary loss of much valuable arable land, to which attention has already been called in the pages of this *Journal*.

#### DRAINAGE OF IRRIGATED LANDS.

*Kind—Oats. Variety—Indian. Planted, 26-4-07. Harvested, 5-10-07.*

| Plot.  | Dry Forage. |           | Area of Plot. | Quantities of Water. | Drainage.   |
|--------|-------------|-----------|---------------|----------------------|-------------|
|        | Per Plot.   | Per Acre. |               |                      |             |
| A<br>B | { 291 lbs   | 3,492 lbs | 1/12th acre   | 8 in. lead           | Undrained   |
| C<br>D | { 285 lbs   | 3,360 lbs | do            | 4 do                 |             |
| E<br>F | { 360 lbs   | 4,320 lbs | do            | 8 do                 | Tile Drains |
| G<br>H | { 375 lbs   | 4,500 lbs | do            | 4 do                 |             |
| I<br>J | { 451 lbs   | 5,412 lbs | do            | 8 do                 | Open Drains |
| K<br>L | { 359 lbs   | 4,308 lbs | do            | 4 do                 |             |

*Kind—Barley Variety—Early Cape. Planted, 26-4-07. Harvested, 24-10-07.*

| Plot.  | Grain.    |           | Area of Plot. | Quantities of Water. | Drainage.   |
|--------|-----------|-----------|---------------|----------------------|-------------|
|        | Per Plot. | Per Acre. |               |                      |             |
| A<br>B | { 93 lbs  | 1,116 lbs | 1/12th acre   | 8 in. lead           | Undrained   |
| C<br>D | { 97 lbs  | 1,164 lbs | do            | 4 do                 |             |
| E<br>F | { 110 lbs | 1,320 lbs | do            | 8 do                 | Tile Drains |
| G<br>H | { 112 lbs | 1,344 lbs | do            | 4 do                 |             |
| I<br>J | { 94 lbs  | 858 lbs   | do            | 8 do                 | Open Drains |
| K<br>L | { 99 lbs  | 891 lbs   | do            | 4 do                 |             |

## **Production of Banana Fibre.**

### A POSSIBLE INDUSTRY FOR NATAL.

CONSIDERING the importance of the banana industry in Natal it is somewhat surprising that no step has yet been taken by planters or others in the direction of extracting the fibre that is to be found in the stems of the banana plant (*Musa sapientum*). There is no doubt that thousands of tons of valuable marketable fibre are annually left to rot on the banana plantations, when the stems are cut down after they have borne their bunch of fruit; and if some portion at least of this material could be reclaimed a new source of wealth to the Colony would thus be tapped.

### BANANA FIBRE IN INDIA.

We learn from Watt's *Dictionary of the Economic Products of India* that in that country the fibre of the plantain has long been used by the natives of India for cordage purposes, for mats, and to a smaller extent for making coarse paper. The fibre attracted early attention from writers on economic subjects, from the fact that it so much resembles Manilla hemp, the product of *Musa textilis*. As far back as 1822 we find that it had been compared with the fibre of the latter, and allowed to be inferior, the specimens examined having been in each case extracted from plants growing experimentally in Calcutta. In 1846 a Mr. May showed Dr. Royle some beautiful specimens of note and letter paper made from plantain fibre. He was at the time anxious to establish a factory for plantain paper in Calcutta, but for some reason abandoned the project. Dr. Hunter, of Madras, sent the fibre and tow of Indian plantain, in a well-cleaned state, to the exhibition of 1851, along with specimens of thick rope, fine cord, and paper of all degrees of fineness from thick packing paper to some "almost as thin as silver paper." A sample of the tow was also sent to the Ordnance Department for trial, and was reported on as "undoubtedly of a very superior description and admirably adapted for packing." The remark was also made that from its soft elastic character it appeared to be a desirable substitute for coir in stuffing hospital beddings, etc.

Dr. Hunter's mode of extracting the fibre is described as follows:—"Strip off the outer layers and clean them in the shade, if possible, soon after the plant has been cut down. Lay a leaf-stalk on a long flat board with the inner surface uppermost; scrape the pulp off with a blunt piece of



hoop-iron fixed in a groove in a long piece of wood. When the inner side, which has the thickest layer of pulp, has been cleaned, turn over the leaf and scrape the back of it. When a bundle of fibres has been thus partially cleaned, it ought to be washed briskly in a large quantity of water, so as to get rid, as quickly as possible, of all the pulpy matter, which may still adhere to the fibres. It may be readily separated by boiling the fibres in an alkaline ley, or in alkaline soaps, but not in the Indian soaps made with quicklime, as they are too corrosive. When the fibres have been thoroughly washed, they should be spread out in thin layers or hung up in the wind to dry. If exposed to the sun when in a damp state, a brownish-yellow tinge is communicated, which cannot be easily removed by bleaching. Exposure during the night to the dew bleaches them, but it is at the expense of part of their strength."

Dr. Royle (*Fibrous Plants of India*) in 1855 devoted a considerable amount of attention to the fibre. Experiments made by him with fibre prepared in Madras showed that it bore a weight of 190 lbs., but some from Singapore bore not less than 390 lbs., while a "salvage" of Petersburg hemp of the same length and weight broke at 160 lbs. A twelve-thread rope of plantain fibre made in India broke with 864 lbs., while a similar rope of pineapple fibre broke with 924 lbs. Dr. Royle concluded: "Even from these experiments it is evident that plantain fibre possesses sufficient tenacity to be applicable to many, at least, of the ordinary purposes of cordage. The outer fibres may also be converted into a useful kind of coarse canvas, as has been done by Dr. Hunter; and the more delicate inner fibres most probably into finer fabrics, as is the case with those of *M. textilis* when equal care has been taken in the preparation and separation of the fibres, and there is some experience in weaving them."

Investigations by Messrs. Cross & Bevan have shown the fibre to contain 13.4 per cent. of moisture, and 64.6 of cellulose. It loses by the process of hydrolysis 11 per cent. when boiled for five minutes in a one per cent. solution of caustic soda, and 33 per cent. when boiled for one hour. (*Watt*.)

---

### BANANA FIBRE IN THE WEST INDIES.

---

In 1887 Mr. (now Sir) Daniel Morris, who had lately been Director of the Botanical Department of Jamaica, in discussing the subject of production of fibre from the banana, wrote:—

"It would appear that the fibre of the ordinary plantain and of the banana is valued at about £12 to £15 per ton. This it will be noticed is only one-third the value of the best qualities of Manilla hemp. There are in both the East Indies and West Indies numerous wild species of *Musa*

which might yield good fibre, but so far none appears to have been found equal to the plant yielding Manilla hemp. The following facts have been elicited by recent experiments. A banana stem just after fruiting, cut, as is usual with the country people, about 2 feet above ground, and denuded of its foliage, weighed 108 pounds; this being divided into three lengths of  $2\frac{1}{2}$  feet each and split longitudinally into several pieces was prepared by beating and washing by hand, and yielded 25 ounces of clean marketable fibre, which is at the rate of 1.44 per cent. of the gross weight. The fibre of the lower portion of the stem, as also the fibre in the petioles of the leaves was not extracted.

"A smaller banana, cut under similar circumstances, that is, 2 feet from the ground, and denuded of its foliage, weighed 41 pounds. This was divided into two lengths of  $2\frac{1}{2}$  feet each, and after being split longitudinally into several pieces was prepared by hand, and yielded  $6\frac{3}{4}$  ounces of good, clean fibre or at the rate of 1.02 per cent. on the gross weight.

"At the Hope plantation similar experiments were conducted with banana stems which yielded very much the same results.

"From ordinary stems of banana, cut after fruiting at about  $1\frac{1}{2}$  to 2 feet above ground, a settler might easily prepare about  $1\frac{1}{2}$  pounds of clean fibre, but if the stems are too large, and if the whole length is used as well as the petioles of the leaves, the amount of fibre might be increased to  $2\frac{1}{2}$  pounds if not 3 pounds per stem.

"With plantain stems the results are more satisfactory than with the banana, both as regards the yield and the quality of the fibre.

"At the Castleton Gardens, a plantain stem weighing, when cut and dressed, 25 pounds, was prepared in exactly the same manner as the banana stems above described and yielded  $7\frac{1}{4}$  ounces of clean fibre or at the rate of 1.81 per cent. on the gross weight. At the Hope Plantation a plantain stem weighing exactly the same, viz., 25 pounds, yielded 9 ounces of clean fibre, and it approaches more nearly to the fine glossy character of the fibre of the Manila plantain.

"For the purpose of comparison I had the fibre of a small stem of the Manila plantain, which, cut at 6 inches above ground and trimmed, weighed 10 pounds, prepared in the same manner as the banana and plantain fibre, and the result was 3 ounces of a beautifully fine and glossy fibre. This is at the rate of 1.87 per cent. on the gross weight.

"In Jamaica another plantain is known as the Abyssinian plantain, *Musa Ensete*, which is the largest species of this genus. It was discovered by the traveller Bruce in Abyssinia, and is remarkable as being represented on ancient Egyptian sculptures. Specimens of this plantain growing at the Government Cinchona Plantations at 5,000 feet have often leaves 20 feet long. The stem is about 8 feet in circumference at the base, rises to a height of 25 feet and weighs probably about a quarter of a ton.

"Specimens of fibre prepared from this plantain are of excellent quality. Taking a portion of the central stem about 4 feet long and weighing 73 pounds, clean fibre, weighing 13 ounces, was obtained by beating and washing by hand. This is at the rate of 1.16 per cent. on the gross weight.

"This plant might be grown extensively for its fibre, and it should prove valuable, but of course not equal to *M. textilis*, which is unapproachable as a fibre plant."

About the beginning of the nineteenth century the Government of Jamaica offered rewards of £200 "for the best specimens of plantain hemp produced in each county of Jamaica." Dr. Stewart West, then Acting Botanist in charge of the Bath Garden, gained the premium for the best specimen produced in the County of Surrey. The fibre was cleaned by being passed through a "cramp" fixed in the ground, and hung up to dry as soon as possible. It was pointed out that "the goodness of the fibre depends upon completely evaporating the sap, otherwise the least fermentation greatly impairs its strength; it cannot therefore be too thoroughly dried before it is packed for use or exportation." A nine-thread rope, 1 inch diameter, of plantain fibre made at the Dockyard, Port Royal, broke with a weight of 728 pounds; whilst a similar rope, known as "the King's nine-thread inch rope," broke by a weight of 714 pounds.

---

#### EXTRACTION OF THE FIBRE.

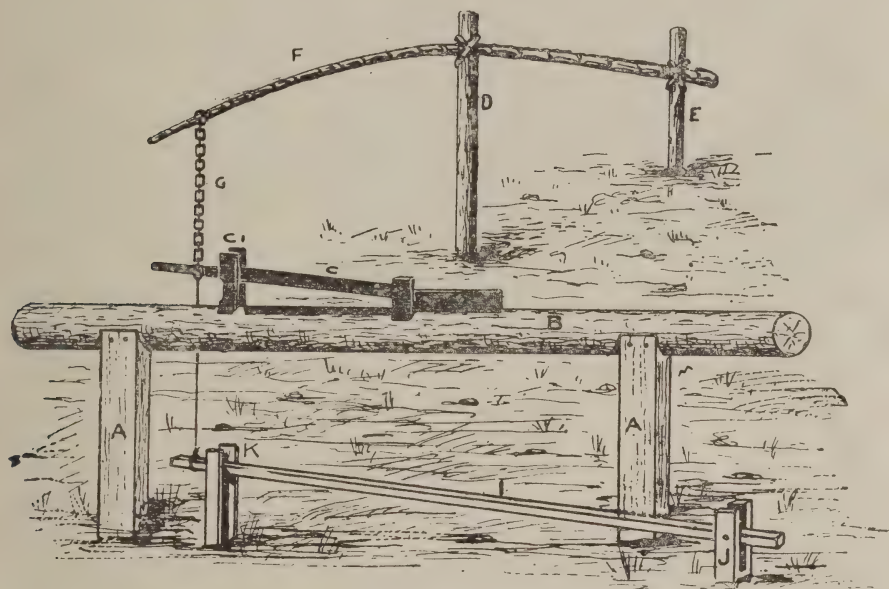
---

As in all forms of fibre cultivation, the question of machinery is an important one. The only information we have on the subject, however, is what follows. We would suggest the preparation of samples of fibre after Dr. Hunter's method as already described, which samples could be forwarded to London for valuation. In the meantime enquiries could be made as to the question of suitable machinery; and, upon receipt of the experts' reports on the fibre submitted to them, it would then be possible to calculate what the cost of production would be and so what profit per acre would probably be obtained. The chief attraction in the idea of organising a banana fibre industry here is the fact that the production of such fibre would mean utilisation of a hitherto waste product from an already established industry. Thus our expenses would commence, not with the purchase of plants and preparation of the soil, but with the employment of extra labour perhaps to cut up or otherwise prepare the stalks of the banana plants and with the purchase of machinery.

We recommend the idea to the serious consideration of our Coast agricultural societies and to individual farmers, and would suggest the preparation of samples of fibre from their plantations for submittal to experts with a view to ascertaining its commercial value.



We may now proceed to lay before our readers such particulars as to machinery for the extraction of the fibre as we have been able to gather. A simple form of machine is that described a few years ago in the *Tropical Agriculturist* of Ceylon. From the illustration we reproduce herewith, it will be seen that the machine is one that could be readily constructed by any planter and might perhaps be improved upon with experience gained with its use.



SIMPLE MACHINE FOR EXTRACTION OF BANANA FIBRE.

The following explanation of the sketch will make clear the construction and principle of the apparatus:—

*a. a.* Two posts fixed in the ground to support the horizontal beam *b*. The beam is fastened securely to the posts by eight stout nails.

*b.* Round wooden beam, 8 feet in length by 6 inches in diameter, fixed horizontally on supports *a. a.*, with its upper surface at the height of about 2 feet 7 inches from the ground.

*c.* Iron knife, about 9 lb. in weight and  $3\frac{1}{2}$  feet in length, with a blunt edge, fixed on an axle to the beam *b*. The blade of the knife should close firmly, and very evenly, on to an iron sole-plate, 15 inches in length by 2 inches in width, and  $\frac{1}{2}$  an inch in thickness, which is secured to the beam *b*. by two screws.

*c. (1)* Wooden block fixed in the beam *b*. with a deep groove cut in it to accommodate the handle of the knife *c*, for the purpose of keeping

it steady. The groove allows the handle to be moved up and down freely, but prevents it from being moved to an undesirable extent laterally.

*d.* Post fixed in the ground at right angles to the beam *b.*, at a distance of 6 feet from the latter. The post should stand about  $4\frac{1}{4}$  feet above the ground level for the purpose of supporting the pole *f.*

*e.* Post driven into the ground firmly at a distance of about 6 feet from *d.*, and standing about  $1\frac{1}{2}$  feet above the ground, for the purpose of tying the base of the pole *f* to.

*f.* Bamboo or other strong supple pole, about 14 feet in length, tied to the two posts *d.* and *e.*, so as to act as a strong spring, to which the handle of the knife *c.* is connected by a chain.

*g.* Chain, connecting *f.* and *c.*, which can be lengthened or shortened as is found necessary in order to obtain the desired pressure of the blade of the knife on the fibre; 1 foot 7 inches to 1 foot 10 inches will be found a useful working range of length of the chain, or distance between the end of the bamboo *f.* and the end of the knife *c.*

*h.* Piece of wire fixed to the end of the knife *c.*, then passing through a hole made in the beam *b.*, and tied to the end of a long, straight stick or bamboo *i.*

*i.* Bamboo or stick, about  $7\frac{1}{2}$  feet in length, which is supported by the wire *h.* at one end, and by a brick, stone, or piece of wood *j.* at the other, so as to serve the purpose of a pedal. When the foot is placed on the stick with a little pressure, the handle of the knife *c.* is depressed and the blade is thereby opened for the reception of a strip of plantain, which it is intended to clean.

*k. k.* Two small stakes driven into the ground and standing about 15 inches in height to serve as guides for keeping the pedal *i.* steady.

*j.* Brick, stone, or piece of wood to support the end of the pedal *i.* about 3 inches above the ground.

Having got the machine or machines fitted up, the next thing to do is to see that the knife-blade fits very evenly and correctly on the flat, iron sole-plate. On no account must the edge of the knife be too sharp, otherwise the fibre will be cut or broken. Having got the knife of the requisite bluntness, the next thing to be considered is the pressure exercised by the spring *f.* A little experience will enable the operator to adjust the pressure to the exact degree that is required to get the best results out of the machine. If the pressure is too great, the fibre will be unduly strained and broken more or less. If, on the other hand, the pressure is insufficient, an unnecessary number of strokes have to be given to get the fibre clean. It is, therefore, a most important matter, to adjust correctly the pressure of the knife-blade. For this purpose, a chain is better suited than a cord to connect the knife handle *c.* and the spring *f.*, as the individual links furnish an easy means of graduating the shortening or

lengthening of the chain, so that almost any degree of pressure that may be desired can be readily obtained.

It may be mentioned that the fibre obtained from the plantain stems which have been grown in full sunlight is considerably stronger than that obtained from stems which have been grown under the shade of trees or in shady situations.

The plantain stems should be cut into  $3\frac{1}{2}$  feet lengths; each length should be opened up into its component parts, and the component parts should be split into strips  $1\frac{1}{2}$  to 2 inches in width. The strips are now ready for being cleaned; and it is advisable that they should be cleaned the same day as the stems are cut down. It will be found that the inner, white and tender, strips are very much easier than the outer green-coloured strips. The inner strips yield a fine, soft, yet strong, fibre, while the green-coloured strips yield a rather coarse fibre. It is, therefore, advisable to reject the two or three outermost component parts (leaf stalks) of the plantain stem, as they are, as a rule, difficult to clean.

The operator should now take a strip in his hands, and place his foot on the pedal (i.) to open the knife. Then place the strip, inner side uppermost, on the iron sole-plate under the open knife, keeping hold of about 6 or 7 inches of the end of the strip, and then allow the knife-blade to close carefully on the strip by taking the foot off the pedal. Now, with both hands the operator should draw the strip, with a good steady pull, through between the blade of the knife and the iron sole-plate. The strip should be passed under the knife two or three times, inner side uppermost, and then a few times outer side uppermost; and, if the pressure on the knife has been correctly adjusted, the strip should be cleaned in about half a dozen or fewer strokes. Having cleaned one end of the strip, which will now appear as clean fibre, the other end which has held in the hand must be cleaned. Place it under the knife, inner side uppermost, leaving about  $\frac{1}{2}$  inch to be cleaned by the second and subsequent strokes, and draw it through quickly. After three or four strokes the fibre will appear quite clean. Now hold the piece of fibre in the centre and give it three or four sharp shakes; then hang it up on a string or bamboo, fixed horizontally at a height of, say,  $5\frac{3}{4}$  feet from the ground, in a shady place conveniently close to the machine to dry. If the day be fine and bright, the fibre will dry in a few minutes, but it should be allowed to hang for several hours to dry it thoroughly. As soon as it is dry it can be made into cords or ropes or stored away for future use.

This machine, however, would probably not work expeditiously and cheaply enough for commercial operations of any respectable dimensions. A better machine, should the extraction of banana fibre here prove a sufficiently profitable industry to warrant its production on a large scale, is one that has lately been invented and patented in France, for which



the inventor claims that it will do the work to perfection and very cheaply. The price of the machine is only about £5, and it is said that it will turn out about 65 lbs. of clean fibre per diem. This machine is called the *Defibreux Duchemin*, and is the invention of M. Eugene Duchemin, one of the most experienced agriculturists in Tonkin. The January issue of the *Queensland Agricultural Journal* thus describes the machine:—

“For the extraction of banana fibre, the installation consists of three extractors, one slicer, and one pulper, the whole costing only 112 francs. (£4 13s. 4d.), and weighing 11 kilos., a little over 24 lbs. To work the five machines, three men, one woman, and a boy or girl are employed, and their united efforts result in the production of 30 kilos. of fibre for the day's work (65 lbs.) Now, if we value the best fruiting banana fibre at £20 per ton, the day's work would be worth about 11s. 7d., and, since black labour can be obtained in New Guinea and in the Solomon Islands at 4d., 3d., and 2d. a day for men, women, and boys, respectively, the cost of producing 65 lbs. of fibre with the machine under notice would only amount to 1s. 5d., or at the most, with native food, 2s., leaving a clear profit of 9s. 7d., per day, or £2 17s. 6d. per week. At this rate it is apparent that the greater number of machines used, the greater the profit in countries where such cheap labour is available.” From these figures Natal planters will be able to work out, provisionally, what profit they would be likely to make, provided that our fibre fetches £20 per ton on the London market.

The *Queensland Journal* adds that “it is claimed for the machine that it will extract the fibre of pineapples, *Sansevieria*, and aloes, as well as that of bananas.”

Commenting upon M. Duchemin's invention, the *Agricultural Bulletin* of the Straits Settlements remarks: “From time to time attention is directed to the great possibilities of our fibre-yielding plants such as ramie, Mauritius hemp, sisal, pineapple, bananas, etc. The great drawback hitherto experienced in the successful exploitation of this industry has been the want of a cheap and reliable machine for extracting the fibre. This want appears to be at last satisfactorily settled by the invention of M. Duchemin, who has had many years' experience in Indo-China as President of the Chamber of Commerce in Tonkin and who appears to have successfully overcome this difficulty.” The *Bulletin* also reprints the following notice of a public exhibition of his machine in full working which took place in the Botanic Gardens in Buitenzorg (Java), from the *Straits Times*: “M. Duchemin, the owner and inventor, exhibited his machines in full working, in the Botanical Gardens in Buitenzorg, before an audience of interested spectators, among whom were the Head Botanist, Mr. H. J. Wigman; his assistant, Mr. J. H. Heye; the Head of the Agricultural College, Mr. J. Pit; Inspector of the Coffee Depart-

ment, W. C. J. Versluys; Dr. Kloos, the French Consul, and others. All expressed themselves entirely satisfied with the result of the experiments. Mr. Duchemin has since exhibited his machine at Salatiga, before experts, with the same success; wild pineapples and pisang stems were satisfactorily stripped before the audience."

A specification of the Portable "Duchemin" Fibre Tools (Patented), appearing in the same number of the *Bulletin*, gives the following descriptions:—

*Defibreur*.—Made in bronze or steel, with interchangeable knives. The workman inserts the leaves to be defibred, by means of the horizontal guide, regulating the pressure by the pedal, then, pulling the leaves towards him all pulp is exuded, leaving the fibres clear and ready for drying. This tool is eight inches high and fourteen inches long, weight only 6 lbs. By attaching new knives when required the machine will last an indefinite time. The *Defibreur* can readily be fixed either by inserting into a notch across a small sapling, or tied to a log driven into the ground, or attached by two screw-bolts to a stout plank forming part of a bench. The two screw-bolts and a coil of wire are supplied free with each machine. The method of working the *Defibreur* is as follows:—The workman presses upon the pedal and then inserts a few inches of the leaves of the plant to be treated, releases the pedal, rolls the ends of the leaves upon a small wooden peg and pulls steadily towards him. In a few seconds he has a handful of clear white fibres free from all pulp. Same is laid aside lengthways to dry and the process repeated.

*Decoupeur*.—Previous to working the leaves of the lilies they must be cut in strips of  $\frac{1}{2}$  inch wide, and the trunks of the bananas into lengths about  $\frac{3}{4}$  inch wide. In order that the *defibrage* may be effectual, it is important that the strips of leaves are cut perfectly straight, otherwise the threads when worked in the *Defibreur* clog and turn out irregularly. It being impossible to cut the leaves "true" by hand, the *Decoupeur* supplies the necessary tool. Same is fixed similarly to the *Defibreur*, has three small interchangeable steel knives, weights 6 lbs., and is sufficient to work three *Defibreurs*.

*Ecraseur*.—To facilitate the quick working of the *Defibreur*, it is better to crush the thick leaves of Sansevieres, pineapples, and the cut lengths of lilies. This operation could be performed by hand with a mallet, but same is uneven and very tedious to the workers, besides being unprofitable to the employer. M. Duchemin has succeeded in giving by this portable crusher most satisfactory results. Weight about 22 lbs. One machine is sufficient to work three *Defibreurs* and is fixed as above.

*Depoulpeur*.—The lengths of bananas should not be crushed as it depreciates the fibre; but, it being necessary to remove some of the superfluous pulp, this tool readily denudes the surplus sap (which, being

very nourishing, forms a valuable article of food for different animals) and enables the workman to *defibre* with ease and rapidity. The tool is fixed in the same manner and is sufficient for three *Defibreurs*. Weight about  $2\frac{1}{4}$  lbs.

Details as to prices, shipment, etc., can be obtained on application to Messrs. F. Dazy & Co., 20, Paper Street, London, E.C.

We shall be glad to have from readers their views as to the possibilities of banana fibre production in this country; and in the meantime we will endeavour to obtain further information to place before our readers.

---

Fibre cultivation is being taken up by many planters in British Central Africa. The *Annual Report* (1906-7) on the Protectorate states that special attention is being given to Sisal and Mauritius hemps. During the year reported on, 27,250 young plants of these two fibres were distributed from the Botanical Department. This constituted the whole supply, but it is stated that three times this quantity would have been planted, had they been available.

---

EXPORTS OF INDIAN TEA.—The Indian Tea Association's statistics, showing the exports of Indian tea from Calcutta and Chittagong during 1907, are now available. The total amount exported was over 231½ million lbs., as compared with 233½ in 1906, 209 in 1905, and 212 in 1904. By far the largest part of this amount came from Northern India, Southern India contributing some 12 million lbs., and, of the total from Northern India, nearly 165½ millions were exported to the United Kingdom and nearly 54 millions to other countries. Of the latter, Russia took the greatest amount, namely 15 millions, Australasia taking 11 millions, China 6½ millions, and North America 4 millions. All these exports show large increases as compared with 1906, with the exception of North America, which in that year took 14 million lbs., the import last year falling to 4 millions. Decreases are also shown in the exports to Egypt, Germany, Turkey, France, Austria, and Denmark. The export to the United Kingdom shows a decrease of 4 million lbs. as compared with 1906, but was considerably greater than those of 1905 and 1904.—*Economist*.



## ***The Production of Honey.***

### EXTRACTING AND MARKETING.

CONSIDERABLE attention is nowadays being given to bee-keeping and the production of honey in Natal; and the latter product is, it is pleasing to note, beginning to supersede the imported article and take its rightful place upon the local markets. Much, however, requires to be done in the direction of improving our methods of extraction and marketing honey. With honey, as with everything else, much depends on how the article is placed upon the market; and a few notes on the subject will consequently not be out of place at the present time.

A question that naturally arises is: "Shall I produce run or drained, extracted or sectional honey?" This question must be answered by each bee-keeper according to the facility with which he can dispose of his produce, always bearing in mind first that sectional honey should only be produced largely in those districts where crops producing honey that quickly granulates are scarce; and, secondly, whether the non-sectional honey should be obtained by extracting honey from the combs, or by simply slicing them and drawing the honey therefrom, must be determined by the size of the apiary, and the interest a bee-keeper takes in his hobby. Returns in both drained and extracted honey are generally allowed to be considerably in excess of the amount taken in section, and, unless there is a quick sale for the latter at remunerative prices, it is preferable that efforts be confined entirely to the production of either drained or extracted honey. The production of extracted honey, moreover, needs considerably less labour for the bee-keeper and also less work of certain kinds for the bees, for it is not necessary for the latter to secrete so much wax. Since it takes several pounds of honey under most conditions to produce one pound of wax, the surplus per colony is greater with extracted honey than with combed. Another advantage is that in the production of extracted honey it is much easier to control swarming since the brood chamber is not contracted so much and the queen has an opportunity to work to her maximum capacity. On the other hand, the colony is usually stronger, with more field bees; this is probably a large factor in the increased amount of surplus obtained from a colony run for extracted honey.

When the honey flow begins, the bees can at once commence to store honey in extracting combs, provided the bee-keeper is careful to put them on in time, but in comb production it is first necessary for the bees to

secrete a considerable quantity of wax before there is room for honey in the surplus boxes or sections, and honey is consequently stored in the brood chamber; if much honey is stored here the queen is cramped for room to lay. The novice at extracted honey production should be careful not to extract so much of the honey in the hive that the bees will not have enough to live on. This is a very common error until the bee-keeper is taught by experience how much to extract. It is better to extract too little than too much.

Taking extracted honey as the most desirable form in which to market honey, we may now proceed to an examination of methods of producing such honey. In the preparation of these notes we desire to express our indebtedness to Quinby's *New Bee Keeping*, to C. N. White's book (*Pleasures of Bee-Keeping*), and to a useful bulletin (No. 15) issued by the U.S. Bureau of Entomology. —

### PRODUCING EXTRACTED HONEY.

Nothing in the progress of bee-keeping is more striking than the processes for securing honey free from comb, as may be realised by a comparison of the old time "strained honey," flavoured with bitter pollen, dead bees, and other dubious elements, with the pure, mint flavoured, snowy crystals of extracted honey which, next to a translucent comb filled with the nectar of a thousand blossoms, is the pride of the bee-keeper. It is beyond question that if, in the future, this sweet is included among the necessities or ordinary luxuries of the masses, it will be in the form of extracted honey. And that it is both cheap and desirable indicates that it will at no distant day take the place of deleterious syrups.

In the production of honey, either comb or extracted, it must be remembered that if the honey flow is short, only those bees which are fully developed at the beginning of the flow are of any value in honey gathering. The amount of brood reared normally increases at the beginning of the honey flow, especially with Italian bees, but this brood is rarely of much use in producing honey gatherers. In many cases it may be desirable to retard brood rearing at the beginning of the flow by caging the queen or even by removing frames of brood. On the other hand, it is advisable to see to it that brood rearing is extensive for several weeks before a honey flow is expected. This may be brought about by stimulative feeding and by the cautious spreading of brood in the colony. This procedure usually pays well. A careful study of locality conditions is necessary before planning operations of this nature.

### THE HIVE.

The hive used for extracted honey production should be at least as large as 10 frames. However strongly the advocates of 8-frame hives or

even smaller ones may urge the advantage of a contracted brood chamber in order to crown the surplus honey into the upper stories, certainly these small hives have little place in the production of extracted honey. The queen should have at least 10 frames for brood rearing, if the bee-keeper is to expect the maximum results. The use of large hives is upheld by the practices of the largest and best extracted-honey producers of the United States, and the small hives have small sale among extensive producers.

#### TIERING.

Before, or just at the time of the beginning of the honey flow, a hive body exactly similar to the brood chamber should be given to the colony. Many bee-keepers put only 8 or 9 frames in a 10-frame hive body used as a surplus chamber so that the bees will build thick combs. Since in uncapping the honey the comb is cut down to about normal thickness, this gives a place for the immediate storing of surplus honey and at the same time permits the bees to secrete some wax. The physiology of wax secretion is very imperfectly understood, but probably wax is always secreted, to a greater or less extent, during a heavy honey flow, and by spacing wide this wax is saved to the bee-keeper.

As the frames of the second hive body become filled, the honey may either be extracted at once and the frames returned to be refilled or an additional hive body full of frames may be put directly over the brood chamber and below the first surplus body. Bees go unwillingly through combs of sealed honey to empty combs higher up, but the new combs should be between the first two hive bodies. This operation may be continued as long as room is required, and the bees should never be unduly cramped for room. On the other hand, it is usually not desirable to give too much room at one time for surplus, for the honey may spread all over the combs and, as one time for surplus, for the honey may spread all over the combs and, as a result, the cells capped when not drawn out well. It is sometimes desirable in the early part of the season to give only two or three frames for surplus at first, gradually increasing the number as necessity arises. This is particularly the case in uncertain weather or in a light honey flow.

When the surplus combs are first put in, one or two frames containing brood with the adhering bees are frequently placed in the second story and empty frames put in their places in the brood chamber. By this means the bees at once get into the second story, and this manipulation is a very desirable thing where brood frames are used for extracting. When only clean combs are used, these brood frames may be returned to the brood chamber in a day or two, for by that time they are usually no longer needed. Of course care must be taken not to lift the queen to the second story above the perforated zinc.

Some bee-keepers prefer the use of shallow extracting combs of a



depth about half that of the ordinary brood frame. The advantage of such a size of frame is, briefly, the possibility of putting on a smaller amount of storing room at one time, in consequence of which the honey is capped over in a better manner. In other words, the forcing methods of comb honey production are carried over into the production of extracted honey. It would certainly be unwise to recommend or condemn this system in general, for its use should be governed by local conditions of the honey flow. In this case, as in many others, the maximum results may not be expected without a careful study of local conditions. Bee-keepers talk a great deal about "locality differences," and, as generally used, the term "locality" is only an excuse for a lack of information as to the true cause of various observed facts. It is nevertheless most true that there are scores of local differences which are great enough to bring success or failure, according as they are studied or neglected.

#### PERFORATED ZINC.

The use of a perforated zinc queen-excluding board between the brood chamber and the surplus bodies is gaining in popularity. Without the zinc the queen is likely to go into the second story, or even higher, particularly toward the close of the season. Some bee-keepers prefer to use combs for extracting which have been used for brood, and if this plan is followed the perforated zinc is absolutely necessary. Honey extracted from dark combs which have been used for brood is darker in colour as a rule than that produced in combs which have never contained brood. This is doubtless due to the fact that a certain amount of the larval skins and larval excreta which are packed at the bottom of brood cells becomes dissolved in the honey. These deposits in the cells are usually spoken of as "cocoon," but certainly only a small part is really the silk of the cocoon. If this really were merely a cocoon, no possible objection could be made to the use of brood combs for extracting. It would probably do little good to advocate the universal use of only such combs as had not been used for brood rearing in the production of extracted honey, but a strict regard for cleanliness would most assuredly demand it.

#### REMOVING HONEY FROM THE HIVE.

Honey should not be taken from the hive until "ripened." When the time comes to extract, the frames should be lifted from the hive and the adhering bees shaken or brushed off. They may be brushed off with a regular bee brush, many styles of which are manufactured, or a bunch of grass or weeds will usually answer as well. The only advantage of a regular brush is that it is always ready for use.

If the honey flow is over or the bees are hard to manipulate on account of their stinging, a bee escape is desirable. The escape is so

arranged that the bees can pass down to the story below with comparative ease but cannot get back. Within a few hours the upper story is cleared of bees and the frame of honey may be removed easily. If the queen is in the upper story, however, as she may be if no perforated zinc is used, or as she occasionally is anyhow, the bees will not desert the brood, and there will still be bees on the comb. Escapes may be put on by quickly lifting the upper story and inserting the board in the evening, and by the next morning the upper story will usually be entirely clear of bees.

After the combs are removed from the hive, they should be kept covered so that the bees in the air will not begin to rob. The manner of carrying them to the extracting room will depend on the number of combs to be carried and the arrangement of the apiary. Tin buckets holding five combs at a time may be used; an extra hive body if often fixed with a handle and cloth cover, or the entire hive body may be carried in on a cart or otherwise if it is free from bees.

#### THE EXTRACTING ROOM.

The place where the honey is extracted should be so arranged that no bees can enter it when attracted by the odor of the honey. The windows should be so built that if some bees do enter they can easily get through bee escapes or cones so constructed that no other bees will be able to find the opening. Bee escapes may be used, but usually a better plan is to have the windows covered with wire cloth tacked on the outside, the wire cloth extending above the window about 6 inches and held away from the side of the house by quarter-inch strips. Bees almost always crawl upward, and they will crawl up the netting and out through the top openings, but other bees will not try to get in their way. A screen so arranged will allow a very large number of bees to escape very quickly. That the extracting room be "bee tight" is practically the only absolute requirement. Honey should never be extracted in the open air except during a very heavy flow, when bees are not inclined to rob. Where several apiaries are under the management of one man, it is sometimes desirable to make a portable extracting house on wheels so that it may be taken from place to place.

#### UNCAPPING HONEY.

The honey, before it is extracted, must be uncapped, and this should be done with a long knife which is kept sharp, clean, and warm. There are several types of uncapping knives. If a considerable amount of honey is to be extracted, it is desirable to have two or more knives for each operator so that one may be heated in hot water as the other is used.

As the cappings of wax are cut off some honey flows out, and consequently the uncapping should be done over a regular uncapping box or

can. This may be easily made at home to suit individual requirements, or any one of the several types offered for sale may be used. The boxes are either made of metal or lined with tin to prevent the leakage of honey, and about half-way up is a heavy wire netting to catch the wax cappings and allow the honey to drain off into the lower compartment. This honey may later be added to what comes from the extractor.

#### THE EXTRACTOR.

The extractor consists of two or more baskets into which the combs of honey are placed and which are revolved inside or with a can. The rotation drives out the honey by centrifugal force, leaving the cells empty, providing the uncapping has been thoroughly done. While the extractor is a very simple machine in principle, its construction has been the subject of much experimenting, and various types have been made. The best type of extractor has been found to be one in which the surrounding can is stationary and the baskets are arranged to revolve inside it. Some types are now made so that the baskets may be turned and both sides of the comb emptied without removing the frame from the basket of the extractor. The more elaborate types, holding several frames and driven by power, may be found described in catalogues of the dealers in bee-keepers' supplies.

The extracted honey flies to the side of the can and then runs to the bottom of the machine; it then runs off through an opening at the bottom into a vessel or tank for the purpose. As it leaves the extractor it should be run through a cheese cloth to remove any particles of wax or other foreign substance which may have got into it.

Empty combs wet with honey should not be returned to the bees while extracting is in progress, for fear of inciting robbing. They may be piled up in the extracting room until the work is almost completed, and, if any additional honey flow is expected, they may then be returned. If to be kept until the next year, they should be given to the bees for a short time to be cleaned of honey, and then removed and put away so that wax moths will not destroy them. The greatest essential in the production of the maximum amount of extracted honey is an adequate number of surplus combs.

#### MARKETING HONEY.

Honey varies in quality and aroma according to the source from which it is obtained by the bees, but this fact is often lost sight of or ignored, and all kinds are mingled together, thus producing a sample of modern quality. All honey, therefore, should be graded, whether it is in comb or extracted, and each quality packed separately. Where white



honey only is secured, it is possible that there may be but one quality; yet it is usually best to make two grades, even if they are simply marked 1st, 2nd. Where both white and dark honey are gathered it is usually necessary to make three grades.

If honey tends to granulate rapidly, it will save much trouble in liquefying to put it into the receptacle. There will then be no difficulty from the various ingredients becoming separated. To preserve the delicate aromas it is desirable that honey be sealed as soon as possible.

The package in which extracted honey will sell best must be decided by the demand. In our local market it is sold largely in glass fruit jars. In some countries honey is put up in tin cans. A bottle makes a much more attractive package, however, and shows off the contents. There is no doubt of the fact that honey sells largely on its appearance, and too much care cannot be exercised in packing and labeling so as to make the package attractive to the purchasers. Jars may be despatched to customers in boxes after being separately surrounded by a sheet of corrugated paper.

---

The productivity of a soil depends not so much on the amount of plant food stored in it as on the condition in which the food exists and its availability to crops.

---

**BEST METHOD OF PACKING LIMES.**—The *West India Committee Circular* mentions that Mr. Frank Evans, Assistant Superintendent of the Botanical Department at Trinidad, who arrived in England at the close of 1907, brought with him a few packages of fresh limes from the island. These limes were put up in various ways, with a view to testing the effectiveness of the different methods of packing. The results were as follows:—(1) Packed in box, no paper wrappers, fruit arrived in bad condition; (2) packed in box, wrapped in tissue paper, fruit in fair condition; (3) packed in baskets, wrapped in tissue paper, fruit in good condition; (4) packed in baskets, wrapped in stiff newspaper, fruit in very good condition. This confirms the frequently repeated statement that limes packed in stout paper keep much better than those wrapped in tissue paper. The stouter paper appears to absorb the moisture, and experience has shown that limes so wrapped will keep a very long time.

## ***Cattle Dipping.***

By W. M. POWER, Veterinary Officer, Headquarters District.

Now that the preventive measures being, or to be, adopted in the endeavour to check the advance of East Coast Fever are receiving more public attention than has been the case hitherto, and as the question of compulsory dipping has received much prominence, it is advisable to place before the public some facts relating to the subject.

It is my intention to first consider dipping apart altogether from the question of East Coast Fever. I may say at once that the Veterinary Department has for some years advocated the destruction of ticks by dipping, and we have advised that every owner in tick-infested districts, which practically means the whole Colony, should have a tank on his own farm and carry out systematic dipping. This was advised before the Colony was actually threatened with East Coast Fever. We realised as many stock-owners did that ticks had become so numerous and had such an injurious effect on the animals it was highly necessary that efforts should be made to keep the animals as free as possible from these parasites.

It is, I think, every farmer's experience that tick-infested cattle cannot thrive as well as those kept free, and that the loss from disease, especially amongst calves, is much greater on farms where no dipping or spraying is carried out than on farms where such precautions are taken. It will be within the memory of many that the idea of dipping cattle did not meet with much favour when first introduced in Natal, many farmers—who had not given it a trial—objecting to it on the grounds that it would “kill the cattle,” “drown the calves,” that “ticks do not convey disease,” etc., and, in fact, if the number of tanks on private farms to-day can be taken as an indication of the farmers' appreciation of the benefits to be derived from dipping, it must be admitted that only a very small proportion are alive to its benefits, as there are only about 120 tanks in the whole Colony and spraying is not carried out by many. Every farmer who has a tank on his farm and who has dipped for any length of time will admit that it is a necessary adjunct to stock farming in this Colony. There is no doubt about the necessity of adopting means for the destruction of ticks, and dipping is the most practical method of doing this. Latterly it has been stated in public that the Veterinary Department has not advocated dipping, but, as I have previously stated, we have for years advised farmers to dip, and in order to refresh the memory of those who forget I reproduce a few extracts from the Annual Report of Mr. Woollatt, then Principal Veterinary Surgeon, for the year 1902:—

"I am strongly of opinion that all farmers who possess  
 "from 100 to 200 head or more of cattle, particularly where ticks  
 "are prevalent, would find it most economical to erect a dip."

\* \* \* \* \*

"I am of opinion that if dips become general throughout  
 "the Colony, and I trust they will, it will do more for the cattle-  
 "breeding industry of this country than anything done pre-  
 "viously."

\* \* \* \* \*

Many similar opinions could be quoted, but, as they are all to the same effect, it is unnecessary to reproduce them here.

I merely mention this matter now to show that if farmers have not not gone in largely for dipping it is not for want of advice.

Now, the question of enforcing compulsory dipping as a means of checking East Coast Fever is quite another matter.

The first point to consider is the length of time the tick which conveys the disease remains on its host. The Brown tick is the common carrier, and only remains on an average three or four days on an animal. The interval between dipping is, say, ten days, and we have no dipping material at our disposal which will prevent ticks coming on to cattle very soon after they are dipped—within twenty-four hours—so it will be seen that a sick animal travelling over a pasture may pick up, infect and drop fresh ticks before a second dipping can safely be applied. One can imagine what a large number of ticks will get on to animals and leave them again in the interval between the dippings, to say nothing of those that escape being killed by the dipping, in the ears, etc. It is unfortunate that this tick does not remain a longer time on animals, as if it did dipping would be much more effective. The common Blue tick, which does not carry East Coast Fever, remains about a month on an animal, and can therefore be subjected to three dippings in that time, and its numbers reduced much more quickly than is the case with the Brown tick.

Experiments carried out in the Transvaal have shown that so long as cattle remain on infected ground dipping has no immediate value as a preventive; in fact, it was found that the mortality was just as high amongst the cattle that were dipped as amongst those that were not.

On fenced farms systematic dipping will reduce the number of ticks and in that way assists in dealing with East Coast Fever, but it is well to remember that one tick is sufficient to communicate the disease.

The difficulties of enforcing dipping would be enormous, especially in a country like this where by far the largest proportion of stock-owners would oppose it. All the native population would object, and many European farmers also, as, even now, there are many of the latter who do not or will not believe that ticks play any part in carrying the



disease. All those who do not approve of dipping—and I have stated they are in the majority—would require a good deal of supervision in order to ensure that all their cattle are properly dipped say twice a month.

There are so many difficulties to be met with in the locations, etc., that I am satisfied that dipping could not be satisfactorily enforced.

With our knowledge of the disease and the life history of the ticks that convey it, I am convinced that the results would not justify the enforcement of a policy of compulsory dipping; in fact, if it is enforced, the results, I venture to prophecy, will be very disappointing to the Colony as far as the eradication of East Coast Fever is concerned.

As I have previously stated, dipping is useful, and we advise it in conjunction with other methods, such as fencing, strictly keeping all cattle on farms etc., but it is highly necessary that its efficacy should not be overestimated; if it is, the result will be that a useful method will be condemned when it is discovered that its effects are not all they are said to be by those who are too enthusiastic over it at present.

I would also like to point out that in the early days of East Coast Fever in Rhodesia dipping was enforced, but was soon abandoned. It must therefore be inferred that if compulsory dipping had proved successful in checking this disease Rhodesia (and also the Transvaal) would have continued the policy.

---

## **Annual Report of the Government Bacteriologist.**

THE following is the annual report of the Government Bacteriologist (Mr. H. Watkins-Pitchford) for the year ending June, 1907:—

The Acting Under Secretary for Agriculture,—

Sir,—I submit herewith the annual report of my Department for the year ending June, 1907.

Such report is intended to comprise only a statement of the routine work carried on at the Laboratory and does not attempt to set forth the details of the main work of investigation now in progress.

As will be seen from the figures appended hereto the routine work of the institution has continued—in spite of the general depression—to increase steadily and to a surprising extent.

This increase, together with the demands made by routine examination and report on East Coast Fever specimens, necessitated the addition to my staff of a veterinary surgeon whose services could be used for the work of disease investigation. This need was most urgent, and the help thus afforded promises to be of great service in advancing the work of disease enquiry now being undertaken. Mr. Beckett, of the Veterinary Department, was accordingly transferred to my Department in March expressly in connection with the work of disease investigation.

This branch of work comprises at present three separate enquiries: Horsesickness, Blue Tongue in sheep, and a disease of calves which is responsible for widespread loss. These enquiries will form the subject of separate reports in due course, but I am able to report that recently increased facilities have already begun to give evidence of progress in each branch of this work of investigation, and I hope to be able to make a pronouncement shortly on the work undertaken in connection with Blue Tongue in sheep. The other investigations in question are both advancing satisfactorily, but progress is slow owing to the time and scope available in a department where facilities are necessarily limited and so many other duties have to be provided for.

I append a table shewing the number of issues of the various preparations and of the routine examination work carried out by my Department during the year in question. Such figures reflect the constant and assiduous work which has been performed by the limited members of my staff, without whose zealous co-operation such a volume of work would have been impossible.

It must always be borne in mind that the Bacteriological Department does not exist as a revenue-producing department, and efforts to attain such an end can only be made at the expense of the legitimate work unless full provision in assistance and appliance is made for revenue as well as for investigation and other scientific ends.

The increasing extent to which information and assistance is sought from this Department by the public and by other Government Departments is seen from the fact that the value of examinations, opinions, etc., undertaken at the official schedule price, was during the year 1906-1907, £2,080, as against £721 11s. in the previous year, such work having thus nearly trebled itself in one year; while the actual issue of vaccine, etc., has during the same period nearly doubled itself (£1,220 in 1906-1907, as compared with £667 15s. for 1905-1906).

It may fairly be said therefore that the routine work of my Department has been more than doubled during the last year and that such increased routine work has been effected without a corresponding increase of personal, etc., will shew that my appreciation of the efforts of my limited staff has not been expressed without reason.

## ANALYSIS OF ROUTINE WORK ISSUES DURING 1906-1907.

| Nature of Examination.                                         | Nos.   | Price as per Schedule. |
|----------------------------------------------------------------|--------|------------------------|
| Human remains for poison ... ..                                | 12     | £ s. d.<br>60 0 0      |
| Sputum, throat swabs, urine, blood, &c. ...                    | 128    | 32 0 0                 |
| Blood examinations for Veterinary and other Departments        | 5,890  | 1,473 0 0              |
| Veterinary specimens as to nature of disease or cause of death | 76     | 39 18 0                |
| Tumours (human and veterinary) ... ..                          | 65     | 97 1 0                 |
| Water analyses (chemical and bacteriological) ...              | 20     | 105 0 0                |
| Articles for blood, &c. ... ..                                 | 73     | 153 6 0                |
| Milk examinations ... ..                                       | 38     | 19 19 0                |
| Postmortem examinations, animals ... ..                        | 3      | 6 6 0                  |
| Analyses of materials for poison ... ..                        | 91     | 95 11 0                |
| Analyses of food other than milk ... ..                        | 5      | 5 5 0                  |
| Agricultural specimens (nature of, &c.) ...                    | 8      | 4 4 0                  |
| Analyses of liquors ... ..                                     | 35     | 18 7 6                 |
| Cattle dips, disinfectants, &c. ... ..                         | 15     | 31 10 0                |
| Skiographs for Militia Department, &c. ...                     | 7      | 7 7 0                  |
| Preparation.                                                   | Doses. |                        |
| Mallein ... ..                                                 | 13,800 | 518 15 0               |
| Anthrax vac.ine ... ..                                         | 1,147  | 26 3 6                 |
| Tuberculin ... ..                                              | 56     | 2 16 0                 |
| Anti-tetanic serum ... ..                                      | 24     | 2 8 0                  |
| Quarter-evil vaccine ... ..                                    | 36,100 | 451 5 0                |
| Blue tongue vaccine ... ..                                     | 5,488  | 34 6 0                 |
| Blue tongue serum ... ..                                       | 1,310  | 18 7 6                 |
| Anti-venene ... ..                                             | 72     | 18 0 0                 |
| Locust fungus (tubes) ... ..                                   | 837    | 41 17 0                |
| Syringes ... ..                                                | 60     | 103 10 0               |
| Pestles and mortars ... ..                                     | 38     | 3 16 0                 |
|                                                                |        | 3,369 18 6             |



## **Cape Pastoral Statistics.**

THE half-yearly returns of the number of sheep and goats in the Cape Colony, compiled by the Chief Inspector of Sheep, have just been published. From these figures we find that, on the 31st December, 1907, there were 115,420 flocks of sheep and goats in the Colony, or 25,836,881 animals. The respective numbers of sheep and goats were as follows:—Woolled sheep, 10,753,419; cross-bred sheep, 6,390,266; Angora goats, 3,528,677; other goats, 5,164,519; total, 25,836,881. The distribution of these animals over the main territorial and fiscal divisions of the Colony is set forth in the following statements:—

### SHEEP.

|                             | Woolled.   | Cross-bred |
|-----------------------------|------------|------------|
| Colony Proper . . . . .     | 8,482,212  | 6,083,752  |
| Bechuanaland . . . . .      | 83,830     | 294,295    |
| Transkei . . . . .          | 479,304    | —          |
| Tembuland . . . . .         | 673,191    | 4,089      |
| Griqualand E. . . . .       | 842,361    | 7,603      |
| Pondoland E. and W. . . . . | 191,521    | 527        |
| Grand Total . . . . .       | 10,753,419 | 6,390,266  |

### GOATS.

|                             | Angora.   | Other.    |
|-----------------------------|-----------|-----------|
| Colony Proper . . . . .     | 3,366,090 | 3,816,708 |
| Bechuanaland . . . . .      | 60,674    | 307,762   |
| Transkei . . . . .          | —         | 245,087   |
| Tembuland . . . . .         | 33,537    | 273,658   |
| Griqualand E. . . . .       | 68,376    | 279,330   |
| Pondoland E. and W. . . . . | —         | 241,974   |
| Grand Total . . . . .       | 3,528,677 | 5,164,519 |

During the six months ended 31st December, 1,109,735 sheep and goats were lost in the whole Colony through drought and disease, whilst on the other hand an increase of 7,134,821 lambs and kids is recorded. Of the 115,420 flocks in the Colony, 113,655 are returned as “free from scab”—or 25,180,530 animals out of the total of 25,836,881.

## **Natal Land Board.**

### MONTHLY MEETING.

THE Land Board held its usual monthly meeting on the 17th, 18th and 19th March, in the Office of the Surveyor-General.

Thirty-eight applicants for land in different parts of Natal and Zululand appeared in person before the Board in support of their applications, twenty-four of whom were passed as suitable settlers, the applications from the remainder being recommended, provided they furnish satisfactory documentary evidence as to their capital or stock.

The number of applicants coming forward every month is increasing, and as the majority of those appearing before the Board are a very good stamp of men, the taking up of land by such settlers is bound to prove of decided benefit to the Colony as a whole.

The Minister of Agriculture (the Hon. W. A. Deane) met the Board, and discussed with them, amongst other matters, the decision taken by Government with regard to the conversion of the Winterton Irrigation Settlement lands from leasehold to freehold, subject to the necessary approval being granted by Parliament.

The Chairman of the Land Board suggested to the Minister that one of the lots being offered at Illovo should be sub-divided into six nine-acre allotments, as an experiment.

Mr. Acutt pointed out that he was of the opinion that there were numbers of men who would be glad of the opportunity afforded of taking up such an allotment, and who had not sufficient capital for the working of a larger area. His idea was that such men should be encouraged to improve their positions, and that these nine-acre blocks, if intelligently and diligently worked, would bring in ready returns as regards pigs, poultry, dairying, vegetables, and fruit. Not only so, but that in many instances married men would be able to take up such holdings and still retain their billets, as it was considered that their wives would be able to look after the "model" farm. With regard to this, Mr. Acutt pointed out that the lands on the South Coast would be especially suitable for such men who might be living in Durban, as they would be able to spend their week ends on the farms and get back to their billets at small outlay.

Mr. Deane approved of the experiment being made, and it was decided to sub-divide Lot 4 of the Illovo lands into six nine-acre blocks, and to offer them at £10 an acre under the Crown Land Regulations—*i.e.*, the first two years rent free—the first instalment of the purchase price

failing due at the end of the third year. Mr. Deane stated that, in the event of this experiment proving successful, he would offer the lands at present reserved at Winkel Spruit under similar conditions.

The Superintendent of Settlements, in his usual monthly report, stated that certain of the blockholders at Weenen are suffering severely from the pest of caterpillars.

The next meeting of the Land Board has been fixed for the 12th May, 1908.

## **Afforestation.**

### CHIEF FOREST OFFICER'S REPORT FOR FEBRUARY.

#### ACTING CONSERVATOR OF FORESTS.—

I have the honour to report for February as follows:—In the Ingeli Forests only is heavy timber being worked, and the restrictions of East Coast Fever confine the trade to local requirements. As the trade is a necessity, some way—probably by the use of mules or donkeys—will have to be found for it, and meanwhile Foresters can be engaged in constructive work. The native demand for wattles and poles for hut-building is just now especially active at Qudeni, in Zululand, owing to the return of released rebels in the Nkandhla. Forester Houshold reports that 437 bundles of wattles were cut in the Qudeni alone during the month—*i.e.*, about twenty thousand young trees. As the forest does not—as undemarcated Zululand forest—come under the Proclamation 58, 1903, no revenue is obtained for this cutting, which must go on destructively until either there is nothing to cut or conservation is enforced. From the extreme southern end of the Colony, Forester Eyles reports that the natives have lately taken to building sod huts to a large extent, thus requiring wood only for roofing. Necessity alone can make them do this, whether caused by destruction of bush, or strict conservation.

At Giant's Castle Game Reserve a large troop of eland were feeding on the slopes of the Berg, moving in the direction of the Little Tugela. Several old bulls isolated from the main herds were noticed, and one, suffering from some skin disease which rendered its hide valueless, was shot on the 10th February. Pheasants have not done well, but the year has been generally favourable to game and to all wild animals. Partridges are reported from different stations as increasing all along the Berg, but



vermin of all kinds have also multiplied everywhere in forest districts. Baboons and monkeys are reported as numerous—especially in young animals—at Qudeni, in Zululand, in Alexandra County, and about Normandien. The dry summer has doubtless been favourable to all wild animals, and the increase of duiker buck is rendering them a nuisance in many districts. While Forester Chilvers, of Ingeli, reports nineteen days upon which rain fell during the month, the Forester at Pongola Bush, near Luneberg, reports an absolute drought: but in many districts the rain has been sufficient, and, with the heat, has brought on the crops well. This applies also to worked sections in the forests, where seedlings are reported as growing strongly.

The Pindrow seed (*Abies Pindrow*), supplied last year by the Punjab (India) Forest Conservancy, is coming up at the Xalingena and Emkazení, though a large proportion, on testing, proved to be worthless seed. Forester Fernando is also planting out a large number of deodars on the slopes of the Emkazení, along the open portion of the "Western Ride." He reports that this graded path, through a steep part of the Emkazení, is becoming popular as a pleasant way through the wild forest: and, though such was not the immediate purpose of the "Ride," the fact that the demarcated and permanent Crown Forests will become the pleasure resort of the public is not one to be overlooked even now. The "Ride" was made to afford access to the Xalingena, where we have cutting sections, on horseback, and, secondly, to give fuller control of the Emkazení Bush, in which much illicit cutting took place by natives of the adjoining locations. Like the similar "ride" of three miles or so I constructed at a nominal cost through Qudeni (Zululand) Forest, the Emkazení one met with doubt as to its possibility, but it presented not a quarter of the difficulty, and I only wish that it passed through anything like the timber of the Qudeni, so that our sylvan wealth could be seen by the public. During the month I visited the bush above Brakwal Railway Station from Van Reenen's and reported thereon. Though of little timber value, these Berg bushes protect the surface below from erosion and should not be destroyed.

Ixopo, 9th March, 1908.

G. H. DAVIES,  
Chief Forest Officer, Natal.

---

Among the most successful farmers are those who make a speciality of dairying. This is because the market is always open to receive good butter and milk.

---

**Laboratory Notes.**

---

By ALEX. PARDY, F.C.S., etc., Analyst.

---

VINEGAR.

---

COMMERCIAL vinegar is simply a dilute solution of acetic acid with various colouring matters and substances derived from the material from which it originates. It is a fermentation product generally of alcoholic substances or those susceptible to alcoholic fermentation. It may be looked upon as an oxidation product of alcohol brought about through the instrumentality of the acetic organism, so that materials which are capable of producing alcohol may be employed in the manufacture of vinegar.

Malt vinegar, as the name implies, is derived from grain in a similar way to that employed in brewing or spirit manufacture. After alcoholic fermentation has taken place the liquor is filtered and subjected to acetic fermentation. This is a favourite vinegar retaining characteristics of the grain. It may be retailed pure or, as is sometimes the case, mixed with vinegar derived from other sources.

Good vinegars may be obtained from other materials, many of which Nature is capable of producing, as, for instance, the sugar cane and beet-root—dilute raw spirit, molasses and waste products—sour or inferior wines, maize, potato, apples and other eligible products. The juices or liquors of any of these materials after they have undergone alcoholic fermentation are capable of giving rise to vinegar when their weak alcoholic solutions are exposed to the air at a temperature ranging from 68 degs. to 95 degs. F. in the presence of the acetic ferment. These latter bodies which originally drop from the air are capable of multiplying in the liquor and turning it by a process of oxidation into acetic acid.

The chief manufacturing process employed in the production of vinegar from alcoholic liquors and grain spirits seems to be that known as the "quick vinegar process." In it upright casks or vats are employed. They stand from 6 to 12 feet in height and run from 3 to 5 feet in diameter. Inside are fitted two perforated discs, one about a foot from the bottom, and the other near the top, the space between the two being filled with beech-wood shavings previously boiled in water, dried, and then soured or saturated with warm vinegar.

Just under the lower disc or false bottom perforations are made at intervals round the cask to admit air which passes up through the

shavings to the outlet on the lid of the cask. Thus the conditions are all present for rapid fermentation of liquid, viz., the presence of air and the acetic organism. The required temperature is partly induced by the heat arising in the vat owing to the changes which take place or regulated from outside. A lid with a central hole is fitted to the head of the cask. Through the latter the liquid is poured into the space between this covering and the first perforated disc lying a few inches further down; the liquid passes slowly through the perforations, and hence trickles quietly down through the beech-wood shavings. There it comes in contact with the ferment and oxygen of the air and rapidly becomes converted into acetic acid. As it collects at the bottom of the cask it is run off and, if necessary, passed through another, or a series of similarly constructed acetifiers until it is completely converted.

When pure alcoholic liquors are used it is necessary to add some food material suitable for the nourishment of the vinegar organism. This may be done by adding a little flour or malt to the liquid before it is fed into the tank.

Wine vinegars are usually characterised by an agreeable aroma and their containing, besides the acetic acid, tartaric and succinic acids and other organic compounds.

Vinegar derived from apples usually has a slight aroma of the fruit and contains, along with other impurities, malic acid.

To those derived from sugar cane or beet, vinous characteristics may be imparted by the addition of the proper vinous ferments.

#### WOOD ASHES.

One of the valuable assets of a farm in the way of bye-products is that of wood ash. Its value is not always sufficiently recognised to induce its careful preservation and employment as a manure. In a country such as this where wood is so largely used as a fuel and where wood trimmings and rubbish have so often to be disposed of by means of fire the loss from neglect and oversight may be very considerable.

The wood of the wattle tree, for instance, yields, when burned, an ash of about 0.35 per cent. or 6 to 8 lbs. per ton. This residue, which is alkaline and has the properties of lime, is comparatively rich in potash and contains a fair amount of phosphoric acid, and is an exceedingly useful material for manurial purposes and more particularly for correcting some of the undesirable chemical and physical tendencies of soils.

The following results of some of the analysis performed in the Laboratories give some indication of the value of such ash under different conditions of preparation and preservation:—



| WATTLE ASH.  |       |         |                  |           |                    |    |    |
|--------------|-------|---------|------------------|-----------|--------------------|----|----|
|              | Lime. | Potash. | Phosphoric Acid. | Magnesia. | Approximate Value. |    |    |
|              |       |         |                  |           | £                  | s. | d. |
| I. . . . .   | 4.18  | 4.99    | 1.33             | 1.45      | 1                  | 17 | 3  |
| II. . . . .  | 0.49  | 0.44    | 0.13             | 0.11      | 0                  | 3  | 6  |
| III. . . . . | 0.34  | 0.42    | 0.12             | 0.24      | 0                  | 3  | 0  |
| IV. . . . .  | 5.34  | 0.40    | 0.15             | 0.16      | 0                  | 9  | 9  |
| ALOE ASH.    |       |         |                  |           |                    |    |    |
| V. . . . .   | 21.52 | 2.42    | 1.29             | —         | 2                  | 6  | 9  |

The approximate value per ton (2,000 lbs.) at Durban is arrived at by employment of the units which are used in the valuation of the ordinary commercial fertilizers.

No. I. refers to an ash derived from the larger branches of wattle trees.

No. II. refers to ash and earth taken from a heap which had been exposed to the weather for two months.

No. III. refers to a heap of ash and wattle leaf mould.

No. IV. refers to ash which has apparently been subject to leaching by rains.

No. I. sample represents a good, well-preserved ash with some considerable value as a manure. As it is practically produced in the locality it is required, no railway expenses are incurred in its transport.

Nos. II. and III. have suffered from leaching and admixture with excessive quantities of soil. They are little more valuable than soil itself, and only warrant extremely local distribution.

No. IV. has had the greater part of its soluble potash and phosphoric acid washed out by rains, consequently its value is decreased thereby, leaving its almost entire importance due to the lime which it contains.

No. V., which represents an ash derived from the wild aloe plant, is of some importance, but chiefly on account of its lime contents.

Owing to the liability of ash to lose its more valuable constituents—potash and phosphoric acid—when subjected to wetting, it is advisable either to distribute it on the land immediately it is formed, or, if it is necessary to store it for some time, to do so in a shed or under such covering as will protect it from moisture and rain.

Much of the value lies in the water soluble constituents, the chief of which is potash. There is no nitrogen present, so that ash does not form a complete manure, nor, so far as it goes, does it afford a well-balanced one; but owing to its nature it is a very valuable material to apply alone to the land. When complete manuring is aimed at the deficiencies may be made up by the addition of quantities of phosphatic and nitrogenous materials, so that with the ash as a basis a very effective manure may be obtained at a moderate cost. The same care, however, has to be taken in mixing with fertilizers containing nitrogen as would have to be exercised in the case of lime or basic slag.

## Exchange Reviews.

### WHAT OTHERS ARE THINKING AND DOING.

THE January *Journal* of the Department of Agriculture and Technical Instruction for Ireland is an interesting number and contains several papers of importance. Of these may be mentioned an article by Professor Geo. H. Carpenter and John W. Steen giving the results of experiments made by them on cattle as to the life-history and treatment of warble-fly. The heavy annual loss caused in Ireland through the damage done to hides of cattle by the maggots of warble-flies makes these insects worthy of study by the Irish farmer, while the points of their life-history that still remain to be cleared up appeal to the curiosity of the naturalist. There are shown to be two kinds of warble-fly—*Hypoderma bovis* and *H. lineata*—both of which are hairy flies, somewhat resembling bees in appearance and flying with a slight hum. Descriptions of the two species are given, followed by particulars of the experiments made. These experiments showed, among other things, that the various dressings that have been constantly recommended for preventing egg-laying by warble-flies are valueless as a protection; and that the eggs are laid most frequently on the legs, the maggot boring through the skin of the animal. It was also found that the common warble-fly in Ireland is *H. bovis*, not, as in England, *H. lineata*.

### *Solanum Commersonii* Violet.

Dr. Geo. H. Pethybridge, of the Royal College of Science, Dublin, submits a report on tests made by the Irish Department of Agriculture with the new French potato, *Solanum commersonii* Violet, and the "Blue Giant." The Department of Agriculture obtained some tubers of the former in 1903, and conducted trials with them in 1904 and 1905, but the results did not warrant their recommendation for planting purposes. During 1907 further experiments were made by the Department in which the claims advanced on behalf of *S. commersonii* Violet were tested and its qualities compared with the "Blue Giant" variety. As a result it is stated that the claims of the former as regards special cropping power, suitability to wet soils, resistance to disease and frost, and excellence of flavour, have not yet been established in Ireland, and it is considered improbable that they will ever become so. Moreover, the variety, if not absolutely identical with the "Blue Giant," so far resembles the latter that the enhanced price of the "seed" of the former is not justi-

fied. Far better varieties of potato are already in cultivation in Ireland, and adherence to the use of the best of these rather than a departure to either of the two varieties in question is recommended.

---

In another article the results of field experiments made during 1907 with barley, meadow hay, potatoes, mangels, oats and turnips, are given, two sets of tests —manurial and variety—being made in each case.

---

The leading papers in the February *Journal* of the British Board of Agriculture are an article on the "Marketing of Poultry," "Experiments with Calcium Cyanamide (by A. D. Hall, M.A.) and "The Pruning of the Peach" (by Walter P. Wright). The first of these articles has been prompted by the greatly increased demand for high-class poultry in Great Britain which has developed within recent years and the ample room that exists for extension in the home supply. Particulars are given of the requirements of the London, Manchester and Provincial markets, together with suggestions as to killing, plucking, shaping grading, packing and forwarding. Mr. Hall's paper, on Calcium Cyanamide, the new nitrogenous fertiliser manufactured by combining the free nitrogen of the atmosphere with calcium carbide, gives the results of experiments made with a view to discovering to what extent certain alleged defects in the fertiliser exist. The experiments have shown that Calcium Cyanamide as now manufactured can be stored for a reasonable time under ordinary conditions without danger or sensible loss of its fertilising properties; Cyanamide can also be mixed without difficulty or loss with superphosphate, the resulting mixture being as easily handled as any other artificial manure.

---

### **Grasses for N.S. Wales.**

Experiments have been conducted at the Hawkesbury Agricultural College and Experimental Farm, New South Wales, for some years with a large number of grasses and forage plants, and close observations have been made of the characteristics and habits of the different varieties, with a view to selecting, if possible, those which will prove satisfactory under New South Wales conditions. In the *Agricultural Gazette* of New South Wales for February Mr. A. H. E. McDonald, the Experimentalist of the Hawkesbury Farm, gives the results of these investigations. Twenty-five kinds of introduced grasses are dealt with and ten native varieties. Useful particulars are given regarding each variety. In the same issue of the *New South Wales Gazette* Mr. C. T. Musson concludes his series of articles on the house sparrow in New South Wales, ending with suggestions for an organised crusade against the pest, which has been found a great nuisance in that country. A summer campaign, to prevent in-



crease in numbers, is suggested, and a winter campaign to reduce the number of sparrows already in existence.

### **Jointed Cactus in C.C.**

Among the various interesting articles which make up the March number of the *Cape Agricultural Journal*, we may note Dr. E. A. Nobbs' Final Report on "Experiments upon the Destruction of Jointed Cactus, 1907." We learn that the jointed cactus (*Opuntia pusilla*, Haw.) first gained a footing in Cape Colony in the Bedford District, where a specimen was kept as a garden plant at Goliahs Wagendrift, on the Kaga Drift, for some time before 1874, when, having been thrown away as valueless, the great flood of the year washed it down the river, whence it has spread in all directions, and is now to be met with frequently throughout the country from Kingwilliamstown to Humansdorp, and from Cradoek and Seymour to the sea. It has been generally regarded as a pest for the last ten years, and has, in fact, been proclaimed a noxious-weed in twenty-one Divisions of the Colony. The experiments, the results of which Dr. Nobbs records, consisted in spraying the cactus with poisonous solutions, several of which were found to kill the plant within a few days. The results obtained by spraying with arsenite of soda were eminently satisfactory; the fatal effect was thorough and uniform, no fresh growth appearing where the standing bushes were sprayed. White arsenic was also tried, but proved a complete failure. Among other poisons used may be mentioned Atlas Preservative, which proved efficacious in every instance; Cairns' Preparation, also entirely fatal; and Steyn's Preparation, at 5 per cent. solution of which proved quite effective. Of all the materials which gave satisfactory results, arsenite of soda was found to be the cheapest.

In the same *Journal* appear the results of an interesting competition instituted by the Western Province Agricultural Society in connection with the recent Show. Prizes were offered for the three best essays on "The Deterioration of the Veld: Its Causes, Prevention and Remedy." The prize-winning essays are published in the *Journal*, and they contain much matter of interest and of value to farmers in South Africa.

### **Economic Entomology.**

One of the principal addresses delivered at the Seventh International Zoological Congress held at Boston in August last was that by Dr. L. O. Howard, Chief of the U.S. Bureau of Entomology, entitled "Recent Progress and Present Conditions of Economic Entomology." This address gives a detailed review of the work that has been done during the past thirteen years, and of the present conditions of activity in practically all countries of the world where attention is paid to the questions of

economic entomology. Speaking of the subjects that have demanded a chief share of attention since 1894, Dr. Howard mentions three in particular: (1) the San Jose scale insect (*Aspidiotus perniciosus*), which has been specially prominent in the United States; (2) the work done in connection with the study of insects injurious to health; and (3) the method of attacking injurious insects by the introduction of other insects to act as parasites on the particular pests to be dealt with.

---

With regard to the San Jose scale, it is stated that this one pest has been responsible, during the past thirteen years, for more legislation (chiefly in the United States) than all the other subjects of entomology combined. Hundreds of thousands of pages have been written on the subject, and hundreds of thousands of dollars lost through its ravages; but as the result of the work of the numerous entomologists employed to deal with it, millions of dollars have been saved. With regard to the second question, viz., work done against insects injurious to public health—this is a subject in which the whole world, and not merely a community, is vitally interested. It was known in 1894 that Texas fever in cattle was conveyed from one animal to another by a tick, and that the causative organism in malaria is a protozoan inhabiting the red blood corpuscles. It was not known, however, till Ross made his discovery some years later, that this organism is carried about in the body of a mosquito. It is only within the last eight years that the ticks and mosquitos of the genera *Anopheles* and *Stegomyia*, and many other biting flies, fleas, etc., have come to be recognised as menaces to public health, and methods have been devised for their control. In this connection Dr. Howard mentions the measures carried out by English workers (more especially those connected with the Liverpool School of Tropical Medicine) for the destruction of mosquitos in various English tropical possessions, and the valuable work done by the American Army surgeons in Cuba in 1898 towards ridding that island of yellow fever. The international work of introducing parasitic enemies of insects which are themselves injurious is described as having developed to a great extent during the past thirteen years, although the first successful experiment in this direction on anything like a large scale was concluded in California twenty years ago. In this work, the United States have been joined by Hawaii, and by Western Australia, South Africa, the British West Indies, Egypt, Portugal, Italy, France, and Chile.

---

Another problem of paramount interest in the entomological world has been how best to prevent the spread of the Mexican cotton boll weevil (*Anthonomus grandis*) in the United States. Originally occurring within a limited area in Texas, where it could easily have been stamped out had the Government of the State adopted the measures recommended

by the Bureau of Entomology of the United States, this pest has spread from State to State with enormous rapidity, and is now responsible for an annual loss estimated at from \$15,000,000 to \$30,000,000. The cost of carrying out the recommendations brought forward in the first place would have been about \$25,000. The result of this fatal economy of ignoring expert advice, on account of the expenditure entailed in carrying it out, is therefore at once apparent. During the past six years, a specially selected staff of entomologists has been engaged in studying every phase of the life-history of the cotton boll weevil, and as a result, an enormous mass of information concerning the insect has been accumulated, which has probably never been exceeded in the case of any other species.

---

A large part of Dr. Howard's paper is taken up with an account of the amount of recognition entomological work has received from Governments and other control bodies, in different countries of the world, in the form of grants of money and facilities for carrying on investigation. In the United States economic entomology has been able to make the most material advances. In 1894 the United States Division of Entomology received a Government grant of \$30,000, and its staff at that time consisted of the chief, with eight scientifically trained assistants. To-day its annual budget has increased to \$340,000, and its pay-roll includes 100 scientific assistants, together with 250 other employees. The agricultural stations in the United States that employ entomologists number fifty-one. The conditions in other countries are dealt with at considerable length; and, coming to South Africa, we find the work of Mr. C. P. Lounsbury in the Cape Colony, the late Mr. C. B. Simpson in the Transvaal, and Mr. Claude Fuller in Natal, referred to. The Transvaal, we notice, is given great credit for its efforts in the direction of the extermination of locusts, whilst Natal, where the destruction of locusts in South Africa was commenced—and commenced successfully—receives no recognition in the matter. We are glad to see the comment that "the work done by Mr. Lounsbury has been of most varied character, and of the most excellent quality; his investigations of the South African tick have been of striking value, and a model for investigators in other parts of the world."

---

Last year the Board of Agriculture of British Guiana commenced the issue of a quarterly *Journal* "with the object of supplying in a popular form information of an agricultural character suited to the requirements of this Colony." The first three numbers are just to hand, and they contain a large amount of information of interest to tropical and semi-tropical agriculturists. The *Journal* is edited by the Government Botanist of British Guiana (Mr. A. W. Bartlett), by whom most of the articles in the first two issues are written.



---

## **Gardening Notes for April.**

---

By W. J. BELL, Nurseryman, Florist and Seedsman, Maritzburg.

---

FURTHER sowings for succession may be made of Cabbage, Savoy, Kale, Beet, Carrot, Lettuce, Radish, Turnip, Endive, Spinach, Mustard and Cress, and Onion.

All varieties of herbs may now be sown, such as Thyme, Sage, Marjoram, Savory, Parsley, Lavender, Rosemary, Rue, Wormwood, etc. When only small quantities are required, the best plan is to sow in boxes or tins. When large enough, the young seedlings should be pricked out a few inches apart into a well-prepared bed of sandy soil, from which they may when larger be finally planted out into permanent quarters. The Parsley may be sown in the open ground where it is required to grow. Lavender thrives best in a poor, dry soil without manure, and must not be over-watered.

Plant out Cauliflower, Cabbage, Brussels Sprouts, Savoy and Celery. Celery should be planted in trenches, which should be dug out not less than two feet in depth. Fill in with about 12 inches of good soil and well-decayed manure in equal proportions, and plant the young Celery plants nine inches apart.

Earth up as required Peas, Broad Beans, Cauliflower, Cabbage, etc. During spells of dry weather give Peas abundant supplies of water, with occasional applications of liquid manure when commencing to pod.

Give Asparagus beds a good mulch of decayed stable dung after cutting down the old stems.

### FLOWER GARDEN.

Sow all varieties of hardy flower seeds for winter and spring flowering. The hardiest and quickest to bloom after sowing are Candytuft, Calendula, Petunia, Sweet Alyssum, Pansy, and Dianthus.

Sowings may also be made of Aster, Aquilegia, Antirrhinum, Campanula, Carnation, Clarkia, Coreopsis, Delphinium, Eschscholtzia, Gaillardia, Godetia, Larkspur, Linum, Mignonette, Nicotiana, Nigella, Philox Drummondi, Poppy, Salpiglossis, Scabious, Sweet Sultan, Ten Weeks and Brompton Stocks, Sweet William, and Wallflower.

Of the Poppies, the Shirley, Mikado and Giant Oriental are the best. The flowers of the latter are of the most gorgeous colours, often six inches across, and grow to a height of three or more feet. The seed requires to be sown very thinly, and must, if necessary, be thinned out to

two feet apart. The other varieties are more dwarf in habit, and may be left about a foot apart.

The seed of the Perennial Phlox should now be sown as it ripens, as it will not retain its vitality for long.

Freesia seed should be sown this month, and will flower in spring.

Daisy, Cowslip, Polyanthus, Primrose, Forget-me-not, Pentstemon, Carnation should be sown in boxes and carefully shaded and watered.

The planting of spring flowering bulbs should be completed this month, such as Anemones, Ranunculus, Narcissus, Daffodils, Bermuda Lilies, Freesias, Agapanthus, Gladiolus, Hyacinths, Ixias, Tulips, etc. When planting Anemones dig the soil at least eighteen inches deep, and introduce a good deal of grit or sand, as they will not succeed in a stiff, cold soil. Light half-decayed manure is also required, when the plants will become a picture and the bulbs will improve for the following season. Plant the bulbs about six inches apart and two inches deep. Be sure that the growing end of the bulb is planted uppermost. This is sometimes difficult to distinguish in the Anemone bulb. When planted upside down, which is not uncommon, much disappointment follows.

The depth which various bulbs require to be planted varies considerable, and failure often occurs through improper planting. The following instructions, which give the depth the crown of the bulb should be planted, may be taken as a guide:—

German Iris, one inch.

Anemone, nearly two inches.

Ranunculus, two inches.

Tulip, three inches.

Gladiolas, four inches.

Narcissus, two to three inches, according to size of bulb.

Liliums, Hyacinths and Amaryllis, four inches.

---

The Maryland Agricultural Experiment Station (U.S.A.), after testing formalin as a remedy for calf scour, announces that it has found that one part of formalin in 4,000 parts of milk will almost invariably destroy the organisms in the bowels of the calf responsible for the disorder. Calf owners should dissolve  $\frac{1}{2}$  an ounce of formalin in  $15\frac{1}{2}$  ounces of water, and add a teaspoonful of this liquid to each pound of milk fed to the calf.

## Correspondence.

### EWES NOT LAMBING.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—I noticed Dr. Theiler's letter relative to the influence alleged by Mr. P. R. Vermaak of blue tongue inoculation upon lambing.

I have no experience in blue tongue inoculation, nor do I wish to attribute Mr. Vermaak's experience to any special cause, but will relate what happened to me some years back. I imported three rams. They arrived late in March with very long fleeces, and were shorn soon after. In April they were put with 100 ewes. The rams served all right, but none of those ewes got in lamb. They were served again in August by the same rams, and all lambed in January. My conclusion was that taking the long fleece off just before putting the rams to the ewes made them impotent for the time being. Probably some similar cause may have affected Mr. Vermaak's rams.—Yours, etc.,

D. B. MENNE.

Greytown, 20th March, 1908.

### COW RECORDS.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—In the penultimate issue of the *Journal* there appears a record of one of Mr. W. F. B. Sutherland's cows, which is excellent. I now give you a record of one of my cows, an Africander.

*Born*—April, 1894.

|                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><i>Calved</i> Nov., 1895, Heifer; Oct., 1896, Heifer; Sept., 1897, Heifer; Oct., 1898, Heifer; Dec., 1899, Heifer; Nov. 1900, Heifer; Nov., 1901, Heifer; Dec., 1902, Bull; 1903, Sold in Calf.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

It will be seen by the above that she had her first calf at 19 months old. Her first heifer calved at one year and eleven months old, also a heifer calf; so that she was a grandmother as a three year old. Her third calf I killed to save the mother from dying of rinderpest, but all the others she reared herself, and was milked with the second calf, and each year after, with the exception of 1907. The fourth heifer had twins at three years old.—Yours, etc.,

CHAS. R. SKOTTOWE.

Mooi River, 24th February, 1908.



## NEW BREED OF MAIZE.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—I notice in the January number of the *Natal Agricultural Journal* you give particulars of the mealie which obtained £1,507 in prizes at the National Corn Exhibition at Chicago last year.

For two years I and my wife have been hand-selecting and crossing our own seed, and last year we grew some 400 enormous cobs of a large pure white mealie. I enclose a photo taken of them last year.\* The small cobs are ordinary Hickory King put in to show the difference in size. The length of the big mealies was 13 inches and carried about  $1\frac{1}{8}$  to  $1\frac{1}{4}$  lbs. of shelled mealies.

I did not show at the agricultural show in Salisbury last year. The men I showed these mealies to, including the Agricultural Department in Salisbury, ridiculed the idea of my having a new mealie, and said they were only freaks. I have waited to see what my present crop is doing before saying anything more. We have selected and crossed our seed as carefully as before, and I have 100 acres of these now just past the green mealie stage. They are turning out cobs better and larger than last year and many thousands of them too. Yesterday I got two cobs in green state over 14 inches long of beautiful shape and proportions.

Now, what I want to know is: Can I sell in Natal some of these mealies for seed on the cobs at a good price? If I were in America I suppose I could make a fortune on them, and I would rather burn them than be forced to sell in Rhodesia at 10s. per bag. As you are aware, here there is no difference in the price of good mealies and of bad mealies.—Yours, etc.,

J. COOKSON, Jun.

Brundret, Mazoe, Rhodesia,

18th February, 1908.

## THE DOG ON THE FARM.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—Has it never occurred to you that your excellent *Journal* would be more complete if it sometimes contained an article on the dog, management of, etc.? Surely you will not say that this animal has nothing to do with agriculture!

Look what an important part he plays on the stock farms of Great Britain. I refer to "the collie" and "the old English bob-tail sheep dog," in particular. One has only to see a specimen of either of these breeds working with a flock of sheep, or a herd of cattle, to appreciate their full

\* See frontispiece of this issue.

value, and understand what an indispensable asset he is to the farmer. At the present time, of course, there are very few sheep in this Colony, and the average flock is not more than five hundred head; but no doubt by-and-by, when the Natal farmer goes in for sheep on a larger scale, and, instead of numbering his flock by hundreds, it will be by thousands, then will be the time for a sheep dog, and probably European shepherds too.

Again, too, I suppose that nine farmers out of every ten own a dog of some description, if not a watch dog, it's either a pointer, or setter, for sporting purposes. These latter breeds are often very valuable animals, if not for show purposes. They may be good with the gun, and are naturally much prized by their owners. How often we hear of farmers losing their dogs from distemper (all canine ailments are called distemper by the average man) or from some other cause; and more often than not, if the said owner had a little knowledge of diseases affecting dogs, and the treatment of same, he would in all probability have been able to save the life of a faithful companion, if not a valuable animal.

Surely there are plenty of "doggie men" in Natal who would be only too pleased to contribute an occasional article dealing with our canine friends, and no doubt some of the "vets" would be willing to give us some of their valuable knowledge on how to treat the many different ailments that the dog is subject to. If one has not this knowledge, how helpless he feels when he sees a sick dog (especially if it is his own) that's suffering pain from some complaint unknown to him. This helplessness is felt more especially too when the poor creature looks up into your face with those sad and appealing eyes that only a dog and a wounded buck possess. What a relief it is if you are able to diagnose the complaint, and use some treatment, even if not successfully; you have the satisfaction of knowing you have done your best, which, after all, is better than doing nothing.

Dear Mr. Editor, I feel sure that if you can find space for such articles as I suggest that they will prove interesting to the great majority of farmers, and will be much appreciated by them.—Yours, etc.,

"The Hermitage," Krantzkop,  
10th March, 1908.

W. F. EVANS.

[We shall endeavour to act upon our correspondent's suggestion in the near future.—ED.]

---

In 1907 we exported locally manufactured soap to the value of £48,828 to other parts of South Africa, and to the value of £1,661 oversea.

## **The Weather and Crops.**

### CONDITIONS IN FEBRUARY.

LITTLE change is observable in the reports relating to rainfall in February from the conditions noted in our last issue in respect to January. Many districts unfortunately report an insufficiency, among which may be noted: Mid-Illovo, Bergville, Camperdown (returned as "bad"), Nel's Rust, Buccleuch, Wartburg, Seven Oaks, Muden, Glenisla, Olivier's Hoek, Besters, Dannhauser, Newcastle, Ingogo, Van Reenen, Utrecht, Babanango, Luneberg and Nqutu. The insufficiency of the rainfall is lessening considerably the prospects of good crops, and is keeping work back. Our Camperdown correspondent remarks that the winter crops in his district will be bad; whilst our Ladysmith correspondent considers that "unless we get good rains this and next month, we shall have a trying winter and a bad spring in most parts. We want a good three-days' rain of three inches to put things right generally." Similar conditions prevail in other parts of the Colony also.

We continue our compilation of data received relative to hailstorms, as follows:—

*Polela*.—Three storms—worst on 14th February. *Damage*: Great, including loss of 32 sheep. *Direction*: Along the Berg from Induwana to Umkomaas.

*Creighton*.—One slight storm, February 26th. *Direction*: East.

*Pietermaritzburg*.—One storm, lasting half an hour. *Damage* to several hundred acres of mealies along the Umgeni River, Albert district.

*Buccleuch*.—One bad storm, travelling down Umgeni from Otto's Bluff. (This is apparently the same storm as that recorded under "Pietermaritzburg.")

*Wartburg*.—One storm. *Damage*: Considerable to crops.

*Greytown*.—One storm, lasting about 5 minutes. *Damage*: Not serious. *Direction*: South to north.

*Krantzkop*.—One storm, on evening of 1st February. *Duration*: About half an hour. *Damage*: Much to mealies and fruit. *Direction*: North to south.

*Weenen*.—One storm, lasting 20 minutes. *Damage*: None. *Direction*: South to east.

*Glenisla*.—Several storms of short duration. *Damage*: Comparatively little. *Direction*: Generally from west to east.



*Besters*.—Two storms, lasting 15 minutes. *Damage*: A little. *Direction*: West to east.

*Ladysmith*.—Three storms, all of short duration. *Damage*: Several farms suffered very much. *Direction*: West to east and north-east.

*Van Reenen*.—One storm, lasting half an hour. *Damage*: To mealie crops on a few farms. *Direction*: East.

*Dannhauser*.—One storm, lasting about 40 minutes. *Damage*: Very extensive in places. *Direction*: East to west.

*Newcastle* (Normandien District).—Two storms: (a) on 2nd February, lasting quarter of an hour. *Damage*: Considerable to mealie crop. *Direction*: South-west to north-east. (b) On 26th February, lasting 5 minutes. *Damage*: Bad in places to mealies. *Direction*: West to east.

*Ingogo*.—One storm, on railway south of Ingogo. *Duration*: Half an hour. *Damage* to natives' crops. *Direction*: North to south.

*Vryheid*.—Two storms (a) On 26th February, lasting 30 minutes, with small stones. *Damage*: Practically none. *Direction*: East to west. (b) On 29th February, lasting 15 minutes, with small stones. *Damage*: practically none. *Direction*: North-west to south-east.

We would like to remind correspondents that it would add considerably to the value of their respective reports if they would insert, as far as possible, dates of the storms which they record. A few are doing this, but we would be glad if more would endeavour to record dates.

On the whole the mealie crop is fairly satisfactory; but, as may be imagined, the adverse rainfall conditions and hailstorms have in several districts lessened the prospects of good yields; and the top-grub is also doing considerable damage. From what we can see so far, nevertheless, the total output of the whole Colony will be very little—if at all—below that of last year, as it appears that in many districts a larger acreage has been planted. There is little change noticeable in the potato crop. On the south coast in many parts a fine crop is expected. A large return will probably be obtained from the wattle plantations of the Colony, provided there is sufficient rainfall to permit of satisfactory shipping. The fruit crop has been a very good one, in spite of the damage done by hailstorms in many districts of the Colony.

Many farmers now are busy ploughing for wattles and *paspalum*. Our Richmond correspondent remarks that a large acreage of the latter will be planted this year. In the Normandien district the same grass seems to be doing well, in spite of the dry, hot weather.

Reports regarding the live stock market are practically all most unfavourable—"indifferent," "bad," and "no market" being the usual comments. Prices of eggs and poultry are, on the whole, good; and very much the same may be said of the prices of milk and butter.

## **South African Markets.**

THE prices of live stock and animal produce, realised on the principal South African markets during the month of February-March, averaged as follows:—

### NATAL.

#### PIETERMARITZBURG.

The Market Master has furnished the following prices realised on the Maritzburg market during the month:—

*Live Stock.*—Fowls, 2s; ducks, 2s 3d; turkeys: cocks 8s, hens 4s 6d; rabbits, 1s 6d.

*Animal Produce.*—Bacon, 8d per lb; pork, 5d per lb; ham, 10d per lb; eggs, 1s 10d per doz; hides, 4d per lb; honey, 6d per lb; lard, 9d per lb; butter, 1s 3d per lb; cheese, 9d per lb.

*Vegetable Produce.*—Barley, 10s per 100 lbs; beans, 12s per 100 lbs; buckwheat, 10s per 100 lbs; earth nuts, 9s per muid; forage (dry), 3s per 100 lbs; hay, 20s per ton; amabele, 8s per 100 lbs; lucerne, £3 per ton; mealies, 4s 3d per 100 lbs; Japanese millet (grain), 4s per 100 lbs; oats (grain), 5s 6d per 100 lbs; onions, 12s per 100 lbs; peas, 10s 6d per 100 lbs; potatoes (table), 3s 6d per 100 lbs; sunflower seeds, 7s 6d per muid; apples, 4s per 100; pears, 12s per 100; bananas, 1s per 100; lemons, 2s per 100; peaches, 1s 6d per 100; pine-apples, 1s 6d per dozen; mangoes, 2s per dozen.

#### DURBAN.

The Market Master reports the following average prices realised during the month:—

*Live Stock and Animal Produce.*—Sucking pigs, 4s 6d; fowls, 1s 4d; ducks, 2s 8d; rabbits, 1s 1d; eggs, 1s 9d per doz; butter, 1s 3d per lb.

*Vegetable Produce.*—Earth nuts, 15s per muid; mealies, 9s 3d per muid; potatoes, 6s per muid; turnips, £2 per ton; bananas, 9d per 100.

### CAPE COLONY.

The following information has been compiled from the last available report of the Cape Superintendent of Agricultural Co-operation (for the week ended 14th March):—

#### *Live Stock and Animal Produce.*

There are a large number of good slaughter oxen and sheep offering,

and prices are consequently weakening. The demand is somewhat limited. Oxen are being quoted at from 34s to 35s per 100 lbs, dressed weight, Maitland. Sheep, averaging about 50 lbs dressed weight, from 18s to 19s, Maitland.

The following prices of poultry, etc., are quoted:—Fowls: small 1s 3d, medium 1s 6d, large 2s to 2s 6d; ducks: medium 1s 3d, large 1s 9d; turkeys: hens 2s to 2s 6d, cocks 3s to 5s; geese: medium 2s 6d, large 3s 6d; ostrich eggs, 2s each; butter (best): 1s 4d to 1s 5d wholesale, 1s 8d retail; Colonial cheddar cheese, 9s to 10½d per lb, delivered Capetown.

*Vegetable Produce.*

A slight improvement has been noticed in the produce trade during the past few days, particularly in regard to oats, many inquiries having been made for seed and feed oats owing to the drought in Australia. It is estimated that approximately 60,000 to 80,000 bags of Colonial oats have been sold for export, which has consequently firmed local prices.

Wheat.—Latest cable advices state that the market remains very firm in Australia.

Bran.—The local market remains very steady owing to the limited supply, Port Elizabeth merchants now quoting 5s 4½d per bag of 100 lbs, c.i.f., for immediate shipment.

Mealies.—The Natal market has again advanced owing to the small stocks held, particularly in small yellow mealies.

Oathay.—The market remains unchanged, and, as previously stated, an advance may be expected in sympathy with other cereals.

In rye and barley the market remains unchanged.

Lucerne.—The market is a shade stronger owing to the low state of stocks held locally.

Kafir Corn.—Prices have advanced owing to a scarcity in this article.

The following prices are recorded in respect of the week under review:

Colonial wheat, per 200 lb: Caledon first, 20s 6d to 20s 7d; Malmesbury, 20s 9d to 20s 10½d; Moorreesburg, 20s 9d to 20s 10d; Porterville-road, 21s 6d to 21s 9d.

Colonial oats, per 150 lb: Caledon first, 6s 3d to 6s 4d; Moorreesburg, 6s 5d to 6s 6d; Malmesbury, 6s 6d to 6s 9d; Main Line, 6s 9d to 7s.

Colonial barley, per 150 lb: Moorreesburg, 8s to 8s 3d; Main Line, 8s 6d to 8s 9d; Caledon, 8s to 8s 3d.

Bran, per 100 lb: 5s 6d to 5s 9d.

Kafir corn, per 200 lb: 18s 9d to 19s 6d, delivered buyer's store.

Mealies, per 200 lb, *ex stores*, Capetown: Natal yellows, 13s 6d to 14s; O.R.C. small yellows, 14s 6d to 14s 9d; Natal white coast, 12s 6d to 12s 9d.



Colonial lucerne hay: 4s 4½d to 4s 6d, *ex* stores, Capetown.

Colonial oathay: 2s 10d to 2s 11d, Main Line stations; 2s 8d to 2s 9d, Moorreesburg and Malmesbury.

Colonial fodder: 4s 3d to 4s 6d, *ex* stores, Capetown.

Colonial compressed chaff: 1s 6d to 1s 7d, Main Line stations; 1s 5d to 1s 6d, Moorreesburg and Malmesbury.

Vegetables and Fruit.—Potatoes, per bag of 150 lbs: first 12s 6d, seconds 8s 6d to 9s 1d; sweet potatoes, 4s per bag of 100 lbs: onions per bag 100 lbs: new season's 5s to 7s 6d, good quality 7s 6d, second quality 5s 6d; beans, Natal, 27s to 30s per bag 200 lbs; plums, 1s per 100; Jargonelle pears, 7s 6d per 100; Cape lemons, 4s 6d to 6s 6d per 100; pineapples, 4s 6d to 6s per 100.

#### KIMBERLEY.

Messrs. Jas. Lawrence & Co., Ltd., P.O. Box 301, Kimberley, report as follows relative to the Kimberley market on the 20th March:—

*Live Stock.*—Oxen (good) prime, 600 lbs and upwards, £9 to £12; cows (good) 450 lbs upwards, £5 10s to £8; calves, 4d per lb dead weight; pigs, 100 lbs (clean), 2½d to 3d per lb live weight; lambs, 30 lbs, 8s to 10s; hampers, 40 lbs to 45 lbs, 10s to 12s 6d; Cape sheep (good), 10s to 13s 6d; kapaters (good), 10s to 13s 6d; trek oxen, £6 to £7; horses: riding £10 to £25, draught £10 to £22 10s, mares £9 to £20. Poultry very plentiful and cheap: fowls, 9d to 1s 4d; ducks, 1s 6d to 2s; turkeys, 3s 6d to 8s.

*Animal Produce.*—Fair demand for eggs—must be fresh; large supplies of butter still arriving; firmer market expected later on. Prices:—Butter: fresh 10d to 1s, second quality 7d to 9d per lb; eggs, 1s 3d to 1s 9d per dozen; hams and bacon, 4d to 6d per lb.

*Vegetable Produce.*—The market for forage, oats, mealies and Kafir corn has firmed slightly since last report. Chaff is a drug, the supply being far in excess of demand. Onions are slightly firmer. Potatoes, first-class samples find ready sale, limited demand for inferior. Prices:—Bran, 6s 6d to 7s per 100 lbs; barley, 7s 6d to 12s per bag of 163 lbs; beans, per bag 203 lbs: sugar 30s to 35s, Kafir 10s to 15s; chaff (Colonial), 4s 6d to 9s 6d per bale, pressed 3s to 3s 6d per 100 lbs; forage, per 100 lbs: good 4s to 5s, inferior 2s 6d to 3s 6d; Kafir corn: S.A. mixed 12s to 15s, white 14s to 17s; Boer meal: unsifted 24s 6d to 27s, sifted 27s to 30s; mealies, per 203 lbs: yellow 9s to 10s, white (hard) 9s to 10s, mixed 8s 6d to 9s 6d; white mealie meal, 10s 6d to 11s per 183 lbs; Cape oats, 8s 6d to 9s 6d per bag 150 lbs; lucerne hay, 3s 6d to 4s 6d per 100 lbs; onions, 6s 6d to 9s per bag 120 lbs; potatoes, 7s to 15s 6d per bag 163 lbs; wheat, 17s 6d to 20s per bag 203 lbs; pineapples, 5d to 9d per dozen.

---

 TRANSVAAL.
 

---

## JOHANNESBURG.

Mr. Alfred Webb, produce agent to the Cape Government, P.O. Box 2342, Johannesburg, reports the following prices realised on the Johannesburg market during the week ended 19th March:—

*Live Stock.*—Boer goats, 15s to 21s; donkeys, £6 to £7 5s; oxen (slaughter), £9 to £15, dressed £1 9s to £1 12s per 100 lbs; pigs, 3d to 3½d per lb live weight; sheep: slaughter lambs 16s to 22s, dressed 4½d to 4¾d per lb; ducks, 1s 3d to 2s 6d; fowls, 1s to 2s; turkeys: cocks 4s 3d to 7s 9d, hens 2s 9d to 4s 3d.

*Animal Produce.*—Eggs: new laid 3s to 4s, fresh 1s 3d to 2s 6d per dozen; butter, 1s to 1s 4d per lb.

*Vegetable Produce.*—Bran, 7s 9d to 8s per 100 lbs net; barley, 7s 3d to 8s 6d per 150 lbs net; beans, dry, 17s to 22s per 200 lbs net; Kafir corn, 12s 9d to 14s per 200 lbs net; manna, 1s 9d to 2s 9d per 100 lbs; mealies, per 200 lbs net: white 8s 6d to 9s, yellow 9s to 10s; onions, 8s to 14s per 120 lbs net; oats (seed), 6s 6d to 10s per 150 lbs net; potatoes, per 150 lbs net: best 10s to 18s, medium 3s to 9s 6d; sweet potatoes, 4s 9d to 7s per 150 lbs net; wheat, 17s to 18s per 200 lbs net; pineapples, 1s to 3s 6d per dozen; bananas, 1s 6d to 2s 6d per 100.

## PRETORIA.

The Commercial General Agency Co., Ltd., Box 784, Pretoria, report the following average prices realised on the Pretoria market during the month ended 15th March:—

*Live Stock and Animal Produce.*—Fowls, 1s 3d to 2s; ducks, 1s 6d to 2s 5d; turkeys, 5s 6d to 13s 6d; eggs: local 2s to 2s 9d, Colonial 1s 1d to 1s 2s per dozen; butter, 1s to 1s 4d per lb.

*Vegetable Produce.*—Forage, 2s 9d to 4s 6d per bale; potatoes, 5s 6d to 17s 6d; mealies, white and yellow, 8s 9d to 11s 6d; hay, 2½d to 6d per bale; bran, 6s 9d to 8s; onions, 6s 3d to 11s 6d; manna, 2s 9d to 5s per 100 bundles; wheat, 18s 6d to 19s 3d per 203 lbs; Kafir corn, 10s 3d to 11s 6d.

---

The cultivation of pineapples is one of the best established industries in Cuba. The annual crop varies from 600,000 to 1,000,000 crates, and is stated to be steadily increasing.

## **The Oversea Maize Market.**

### THE POSITION IN FEBRUARY.

ADVICES from London to hand, in respect of the month of February, show that the maize market has been very quiet. Some idea of the prices which have been prevailing, as compared with those realised last year and the year before, will be gathered from the following statement, which gives the prices of La Plata (landed) for four weeks in 1908 with the prices recorded in the corresponding weeks of 1907 and 1906: —

#### PRICES OF LA PLATA MAIZE.

| Week Ending.      | 1908. | 1907. | 1906. |
|-------------------|-------|-------|-------|
| Feb. 7 . . . . .  | 25 9  | 22 6  | 25 3  |
| Feb. 14 . . . . . | 25 6  | 22 3  | 25 3  |
| Feb. 21 . . . . . | 25 0  | 22 3  | 25 0  |
| Feb. 28 . . . . . | 25 0  | 23 0  | 25 0  |

On the 13th February 23s. 6d. was bid for La Plata parcels from London and Liverpool, April-May shipment, and 23s. 3d. for May-June shipment. Odessa and Roumania for shipment, which had been ruling high, came down to 26s. 6d. for Foxanian and 26s. 3d. for Odessa  $\frac{1}{2}$ -old crop. La Plata parcels dropped also the following week to from 22s. 6d. to 22s. 9d. April-May shipment. The same week mixed American ex-ship was sold in Mark Lane at 24s.  $1\frac{1}{2}$ d. to 24s. 3d. During the week ended 28th February prices ruled firm, especially for American and new crop La Plata, for which 3d. to 6d. advance on the week was obtainable. No sales of cargoes transpired, but there were buyers on the 27th at 23s 9d. for La Plata steamer March-April shipment, 23s. 3d. for April-May and 22s. 9d. for May-June shipment. In mixed American parcels for London a fair business resulted, and for February shipment uncovered shorts had to pay as much as 24s.  $7\frac{1}{2}$ d.; whilst for March shipment up to 24s.  $1\frac{1}{2}$ d. was paid.

The *Evening Corn Trade List*, in its issue of the 14th February, says: "The Argentina shipments are now practically nil, and will no doubt continue so until towards the end of April. Russia and Roumania are also not likely to trouble us with passing offers; Roumania, with a crop of only 7,000,000 qrs., can hardly be expected to be able to ship more than 4,000,000 qrs. this season, including a fair quantity of old crop; since August 1st about 3,000,000 qrs. have already been exported, whilst Russia have a surplus of about 2,500,000 qrs., of which 1,500,000 qrs.



have already been shipped since August 1st. The onus of supplying European wants until May lies, therefore, mainly with America, which country has since November 1st shipped only about 1,750,000 qrs., against 2,500,000 qrs. last season. Shipments, however, are now increasing, the comparative high price being sufficiently attractive; fortunately the condition of new corn arriving in this country has been on the whole good, indicating unusual care in shipping. The American visible supply is also gradually increasing, being now 14,851,000 bush., against 16,181,000 bush. last year, and 23,000,000 bush. in 1906."

Though from the indications it does not appear that the Argentine crop will be a large one, it is expected to be much larger than that of last year. From the trend of *Reuter's* cable advices lately, however, it would appear that adverse conditions, such as were experienced a little time back, are affecting the prospects of the harvest.

### STATISTICS.

The following statement (taken from the *Corn Trade List*) showing the comparative maize exports from America (for calendar years) and Argentina (for the 12 months ending 30th April) may be of interest to Natal growers:—

|              | American.<br>Qrs. | Argentine.<br>Qrs. |
|--------------|-------------------|--------------------|
| 1907 .. .. . | 9,588,000         | 5,700,000          |
| 1906 .. .. . | 11,900,000        | 12,000,000         |
| 1905 .. .. . | 12,950,000        | 10,150,000         |
| 1904 .. .. . | 5,410,000         | 11,390,000         |
| 1903 .. .. . | 10,600,000        | 10,225,000         |

The general statistical position of maize on the 28th February was as follows:—

|                                                            | 1907-8—qrs.   | 1906-7—qrs.   | 1905-6—qrs.   |
|------------------------------------------------------------|---------------|---------------|---------------|
| On passage to U.K. .. ..                                   | 485,000       | 640,000       | 670,000       |
| " " Cont. ....                                             | 515,000       | 625,000       | 915,000       |
| Imports into U.K. for the 8 weeks ending<br>Feb. 22 ... .. | 1,337,200     | 1,855,650     | 1,926,400     |
| Visible supply in U.S. ( <i>Bradstreet's</i> ) ...         | 1,865,100     | 2,105,900     | 2,690,800     |
| American crop ... ..                                       | 295,000,000   | 340,000,000   | 316,000,000   |
| New York, Spot ... ..                                      | 1908.<br>61½c | 1907.<br>54½c | 1906.<br>47½c |
| Mark Lane, La Plata landed ... ..                          | 25/-          | 23/-          | 25/-          |

## SHIPMENTS OF MAIZE TO EUROPE FROM JANUARY 1ST TO DATE.

|                  | 1908.<br>U.K.* | 1908.<br>Cont. | 1907.<br>U.K.* | 1907.<br>Cont. | 1906.<br>U.K.* | 1906.<br>Cont. |
|------------------|----------------|----------------|----------------|----------------|----------------|----------------|
|                  | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           |
| America ... ..   | 754,000        | 675,000        | 939,000        | 954,000        | 1,688,000      | 2,973,000.     |
| Argentine ... .. | 125,000        | 136,000        | 312,000        | 319,000        | 128,000        | 220,000.       |
| Russia ... ..    | 151,000        | 219,000        | 225,000        | 198,000        | 16,000         | 52,000.        |
| Danube, etc. ... | 280,000        | 315,000        | 184,000        | 269,000        | 33,000         | 55,000         |
| Total ... ..     | 1,310,000      | 1,345,000      | 1,660,000      | 1,740,000      | 1,865,000      | 3,300,000.     |

\* Includes shipments for orders.

Our annual bill for articles of food and drink from abroad is a large one. Last year we spent £2,218,914 for such goods. In 1906, however, our imports were even higher—amounting in value to £2,601,812. We paid last year £68,210 for sugar, £60,959 for tea, £570,815 for meats of all kinds, £295,917 for corn, grain and flour, £30,303 for fresh fruit and £10,728 for bottled and tinned fruit, £17,388 for lard, £210,549 for butter, £43,510 for cheese, £43,900 for coffee. These figures are significant. Of course, all these goods were not consumed in Natal, but the fact remains that South Africa is importing large quantities of stuff that she ought to be producing herself.

A NEW TEA DRIER.—A new tea drier, recently invented by a citizen of India, has been introduced and tested on the Huldibari tea estate, in the Dooars (Eastern India), which is reported to have proved very successful. In a set of trials it turned out 500 pounds of 90 per cent. fired tea in one hour, and 700 pounds of moisture was evaporated during the same time. The principle of the machine is that the hot air is forced into the drying chamber of the machine under pressure by a fan, which is a new idea and better than the old type of automatic driers, in which the hot air was exhausted from the drying chamber. It is claimed by the inventor that tea dried by use of the new machine is superior to that made in the old way; that none of the flavour is taken away from the tea, and that neither is the essential oil destroyed in the process of manufacture.

## Coal and Labour Return.

Return of Coal raised and Labour employed at the Natal Collieries for the month of February, 1908:—

| Name of Colliery.        |    | Average Labour Employed. |     |       |               |       |       |                     |     |     | Output.    |    |
|--------------------------|----|--------------------------|-----|-------|---------------|-------|-------|---------------------|-----|-----|------------|----|
|                          |    | Above Ground.            |     |       | Below Ground. |       |       | Unproductive Work.* |     |     | Tons. Cwt. |    |
|                          |    | E.                       | N.  | I.    | E.            | N.    | I.    | E.                  | N.  | I.  |            |    |
| Natal Navigation         | .. | 35                       | 91  | 275   | 22            | 349   | 248   | 2                   | 12  | —   | 26,292     | 19 |
| Elandslaagte             | .. | 24                       | 10  | 296   | 22            | 280   | 561   | 4                   | 20  | 16  | 18,200     | 1  |
| Durban Navigation        | .. | 26                       | 183 | 54    | 13            | 468   | 77    | —                   | —   | —   | 15,971     | 0  |
| Dundee Coal Co.          | .. | 25                       | 14  | 219   | 16            | 208   | 381   | 1                   | 5   | 22  | 14,383     | 8  |
| South African            | .. | 10                       | 11  | 124   | 12            | 220   | 25    | 5                   | 28  | 18  | 12,022     | 10 |
| Natal Cambrian           | .. | 16                       | 40  | 168   | 9             | 298   | 99    | 2                   | 1   | 4   | 10,431     | 8  |
| St. George's             | .. | 19                       | 98  | 118   | 13            | 370   | 139   | —                   | —   | —   | 9,722      | 0  |
| Newcastle                | .. | 10                       | 44  | 30    | 8             | 331   | 3     | 2                   | 10  | —   | 6,748      | 12 |
| Glencoe (Natal)          | .. | 5                        | 45  | 25    | 4             | 182   | 10    | 17                  | 46  | 41  | 5,412      | 5  |
| Natal Steam Coal Co.     | .. | 3                        | 82  | 4     | 3             | 206   | 6     | —                   | 16  | 5   | 5,195      | 18 |
| Ramsay                   | .. | 3                        | 15  | 34    | 5             | 141   | 104   | 1                   | 2   | 3   | 3,293      | 11 |
| Ta'ana (Natal)           | .. | 8                        | 44  | 21    | 5             | 164   | 54    | —                   | —   | —   | 3,150      | 19 |
| West Lennoxton           | .. | 5                        | 2   | 62    | 2             | 35    | 111   | —                   | —   | —   | 3,105      | 10 |
| Central                  | .. | 5                        | 47  | 12    | 7             | 149   | 82    | —                   | —   | —   | 1,970      | 8  |
| Zululand                 | .. | 4                        | 35  | 2     | 4             | 85    | 16    | 1                   | —   | 1   | 1,675      | 10 |
| Ballengeich              | .. | 4                        | 30  | 10    | 1             | 40    | 13    | 7                   | 116 | 20  | 371        | 6  |
| Woodlands                | .. | 2                        | 6   | 7     | 2             | 9     | 6     | —                   | —   | —   | 211        | 0  |
| Vaalbank                 | .. | —                        | —   | —     | 1             | 3     | —     | 1                   | 3   | —   | 5          | 0  |
| Dumbi Mountain           | .. | 1                        | 1   | —     | —             | —     | —     | —                   | —   | —   | 4          | 10 |
| Nooitgedacht             | .. | —                        | 2   | —     | 1             | 2     | —     | —                   | —   | —   | 4          | 0  |
| Totals                   | .. | 205                      | 800 | 4,461 | 150           | 2,540 | 1,935 | 43                  | 259 | 130 | 138,171    | 15 |
| Corresponding month, '07 |    | 159                      | 697 | 1,358 | 122           | 2,523 | 1,553 | 35                  | 119 | 152 | 101,151    | 17 |

\* Cost charged to Capital Account.

The following is the January return of the Glencoe Colliery which was received too late for publication last month. Labour above ground, 212; below ground, 545; unproductive work, nil; output, 14,616 tons 13 cwt.

**CHAS. J. GRAY,**  
Commissioner of Mines.

Mines Department, Maritzburg,  
9th March, 1908.

Return of Coal bunkered and exported from the Port of Durban for the month of February, 1908:—

|                     | Tons.          | Cwt.      |
|---------------------|----------------|-----------|
| Bunker Coal ... ..  | 59,183         | 13        |
| Exported to:—       |                |           |
| East London ... ..  | 4,510          | 8         |
| Algoa Bay ... ..    | 3,078          | 8         |
| Simonstown ... ..   | 703            | 16        |
| Cape Town ... ..    | †18,404        | 9         |
| Buenos Aires ... .. | 7,543          | 18        |
| London ... ..       | 1,017          | 18        |
| Beira ... ..        | 57             | 11        |
| Colombo ... ..      | 309            | 5         |
| Bombay ... ..       | 644            | 13        |
| Madras ... ..       | 500            | 5         |
| Batavia ... ..      | 4,821          | 10        |
| <b>Total ... ..</b> | <b>100,775</b> | <b>14</b> |

† Including 10 tons Coke.

**GEO. MAYSTON,**  
Collector of Customs.

Custom House, Port Natal,  
2nd March, 1908.



## Meteorological Returns.

Meteorological Observations taken at Government Stations for Month of February, 1908.

| STATIONS.         | TEMPERATURE (IN FAHR. DEGS.). |         |                    |                    | RAINFALL (IN INCHES). |              |                             |      |                                     |                                            |
|-------------------|-------------------------------|---------|--------------------|--------------------|-----------------------|--------------|-----------------------------|------|-------------------------------------|--------------------------------------------|
|                   | Means for Month.              |         | Maximum for Month. | Minimum for Month. | Total for Month.      | No. of Days. | Heavy's rain-fall in 1 day. |      | Total for Year from July 1st, 1907. | Total for same period from July 1st, 1906. |
|                   | Maximum                       | Minimum |                    |                    |                       |              | Fall.                       | Day. |                                     |                                            |
| Observatory ..    | 83.6                          | 68.8    | 90.9               | 63.0               | 3.27                  | 15           | 1.57                        | 5th  | 24.49                               | 28.95                                      |
| Stanger ..        | 87.0                          | 67.8    | 102                | 60                 | 5.59                  | 15           | 1.05                        | 1st  | 34.85                               | 31.37                                      |
| Verulam ..        | 90.8                          | 67.5    | 99                 | 61                 | 5.78                  | 14           | 1.90                        | 27th | 28.10                               | 29.45                                      |
| Greytown ..       | 84.9                          | 51.1    | 98                 | 44                 | 4.68                  | 15           | 1.24                        | 4th  | 30.45                               | 28.79                                      |
| Newcastle ..      | 87.8                          | 60.6    | 97                 | 55                 | 2.94                  | 10           | .88                         | 22nd | 31.94                               | 44.91                                      |
| Nedwedde ..       | 77.9                          | 65.1    | 89                 | 57                 | 4.35                  | 13           | 1.32                        | 5th  | 26.00                               | 31.73                                      |
| Estcourt ..       | 87.9                          | 59.3    | 97                 | 54                 | 2.60                  | 8            | .75                         | 15th | 23.53                               | 24.41                                      |
| Camperdown ..     | 85.1                          | 60.2    | 98                 | 54                 | 4.34                  | 11           | 2.12                        | 29th | 23.49                               | 31.14                                      |
| Mid-Dlolo ..      | 80.0                          | 62.0    | 95                 | 54                 | 4.13                  | 14           | 1.29                        | 5th  | 28.76                               | 33.24                                      |
| Port Shepstone .. | 84.6                          | 61.2    | 94                 | 55                 | 8.39                  | 11           | 2.20                        | 5th  | 29.51                               | 30.62                                      |
| Umzinto ..        | 90.3                          | 52.2    | 94                 | 50                 | 5.34                  | 7            | 2.05                        | 5th  | 25.50                               | 38.22                                      |
| Richmond ..       | 82.8                          | 60.4    | 98                 | 53                 | 5.92                  | 17           | 1.60                        | 29th | 32.49                               | 39.11                                      |
| Maritzburg ..     | 84.8                          | 61.4    | 100                | 52                 | 6.27                  | 17           | 2.20                        | 29th | 29.51                               | 39.64                                      |
| Howick ..         | 82.5                          | 58.3    | 96                 | 54                 | 6.33                  | 15           | 1.40                        | 29th | 31.93                               | 33.20                                      |
| Krantzkop ..      | 85.6                          | 58.9    | 94                 | 53                 | 3.91                  | 11           | .91                         | 29th | —                                   | —                                          |
| Weenen Gaol ..    | 95.0                          | 62.6    | 104                | 57                 | 3.96                  | 15           | 1.33                        | 29th | 24.82                               | 25.38                                      |
| Impendhle ..      | 80.7                          | 53.9    | 89                 | 48                 | 8.37                  | 19           | 1.47                        | 29th | 32.91                               | 34.44                                      |
| New Hanover ..    | 88.3                          | 58.8    | 98                 | 50                 | 6.15                  | 16           | 1.75                        | 29th | 33.03                               | 43.56                                      |
| Charlestown ..    | 81.1                          | 54.2    | 89                 | 43                 | 1.80                  | 11           | .63                         | 5th  | 23.04                               | 45.12                                      |
| Vryheid ..        | 85.8                          | 58.7    | 98                 | 52                 | 2.62                  | 8            | .50                         | 5th  | 28.85                               | 30.95                                      |
| Ingwavuma ..      | 88.9                          | 61.6    | 100                | 55                 | 4.90                  | 8            | 3.00                        | 29th | 23.82                               | —                                          |
| Mtunzini ..       | 87.4                          | 59.7    | 100                | 50                 | 4.91                  | 12           | 1.26                        | 1st  | 39.57                               | —                                          |
| Ilabisa ..        | 84.1                          | 67.2    | 94                 | 60                 | 5.30                  | 6            | 1.70                        | 22nd | 26.15                               | 36.91                                      |
| Melmoth ..        | 85.0                          | 61.8    | 100                | 55                 | 2.18                  | 15           | .57                         | 5. h | 21.12                               | 31.77                                      |
| Ubombo ..         | 85.5                          | 62.2    | 98                 | 55                 | 3.95                  | 7            | 1.55                        | 3rd  | 26.45                               | 41.69                                      |
| Point ..          | —                             | —       | —                  | —                  | 7.02                  | 14           | 2.50                        | 4th  | 34.19                               | 30.30                                      |
| Mahlabatini ..    | 85.3                          | 53.6    | 96                 | 48                 | 2.65                  | 7            | .74                         | 29th | 22.98                               | 28.17                                      |
| Empangeni ..      | 85.9                          | 66.1    | 100                | 57                 | 5.32                  | 9            | 1.80                        | 4th  | 33.30                               | 26.87                                      |
| Buwer ..          | —                             | —       | —                  | —                  | 8.44                  | 19           | 1.33                        | 3rd  | 37.44                               | —                                          |
| Amatikulu ..      | 89.0                          | 65.8    | 104                | 59                 | 6.71                  | 13           | 2.02                        | 4th  | 28.19                               | 22.80                                      |
| Imbizana ..       | —                             | —       | —                  | —                  | 5.40                  | 8            | 2.11                        | 5th  | 28.86                               | —                                          |

Meteorological Observations taken at Private Stations for Month of February, 1908.

| STATIONS.                        | TEMPERATURE (IN FAHR. DEGS.) |                    | RAINFALL (IN INCHES). |              |                              |      |                                     |                                        |
|----------------------------------|------------------------------|--------------------|-----------------------|--------------|------------------------------|------|-------------------------------------|----------------------------------------|
|                                  | Minimum for Month.           | Maximum for Month. | Total for Month.      | No. of Days. | Heaviest rain-fall in 1 day. |      | Total for Year from 1st July, 1907. | Total for same period from July, 1906. |
|                                  |                              |                    |                       |              | Fall.                        | Day. |                                     |                                        |
| Nottingham Road ..               | —                            | —                  | 12.56                 | 22           | 2.10                         | 29th | 44.94                               | 33.96                                  |
| Adamshurst (Wm. Adams) ..        | 93                           | 55                 | 8.1                   | 14           | 1.28                         | 22nd | —                                   | 26.68                                  |
| Hilton ..                        | 90                           | 52                 | 5.64                  | 21           | 1.33                         | 28th | 30.98                               | 37.76                                  |
| Ottawa ..                        | —                            | —                  | 5.30                  | 12           | 2.25                         | 28th | 27.85                               | 30.18                                  |
| Mt. Edgecombe (Natal Estates) .. | —                            | —                  | 3.87                  | 13           | 1.37                         | 5th  | 29.13                               | 34.76                                  |
| Cornubia ..                      | —                            | —                  | 5.02                  | —            | —                            | —    | 22.19                               | 36.45                                  |
| Milkwood Kraal ..                | —                            | —                  | 2.12                  | —            | —                            | —    | 17.14                               | 26.26                                  |
| Blackburn ..                     | —                            | —                  | 3.17                  | —            | —                            | —    | 19.19                               | 28.92                                  |
| Saccharine ..                    | —                            | —                  | 4.30                  | —            | —                            | —    | 30.19                               | 30.87                                  |
| Equeeefa (W. Hawksworth) ..      | 92                           | 64                 | 3.89                  | 13           | 1.39                         | 5th  | 29.13                               | 41.83                                  |
| Umzinto, Beneva ..               | —                            | —                  | 4.78                  | 11           | 1.52                         | 4th  | 29.85                               | 39.44                                  |
| Harden Heights ..                | —                            | —                  | 3.88                  | 13           | 1.46                         | 2nd  | —                                   | —                                      |
| Riet Vlei ..                     | —                            | —                  | 3.22                  | 13           | 0.95                         | 29th | 21.38                               | 25.20                                  |
| Dalton (Fawn Leas P.O.) ..       | —                            | —                  | 4.75                  | 13           | 1.24                         | 22nd | 26.28                               | 29.52                                  |
| Bransholme ..                    | —                            | —                  | 8.89                  | 13           | 2.40                         | 29th | 53.74                               | 50.94                                  |
| Cedara—Hill Station ..           | 93                           | 53                 | 5.22                  | 16           | 1.03                         | 26th | —                                   | 30.68                                  |
| Cedara—Vlei Station ..           | 94.5                         | 52                 | 5.76                  | 16           | 1.45                         | 29th | 26.89                               | —                                      |
| Winkel Spruit ..                 | 87                           | 61                 | 6.48                  | 14           | 2.44                         | 4th  | 30.69                               | 33.96                                  |
| Weenen ..                        | 97                           | 50                 | 3.76                  | 9            | 1.05                         | 1st  | —                                   | 19.67                                  |
| Giant's Castle ..                | 76.1                         | 55.9               | 4.74                  | 15           | 0.62                         | 4th  | 21.37                               | —                                      |

## Return of Farms at Present under Licence for Lungsickness and Scab.

| STOCK INSPECTOR. | DISTRICT.           | DISEASE.     | OWNER.                     | FARM.                    |
|------------------|---------------------|--------------|----------------------------|--------------------------|
| A. P. Crow       | Ladysmith ..        | Scab         | W. Anderson ..             | Netherby                 |
|                  |                     | "            | W. M. Buys ..              | Ruit Kuil                |
|                  |                     | "            | F. Colling ..              | Klipdal                  |
|                  |                     | "            | H. N. Nel ..               | Catharine                |
|                  |                     | "            | J. van de Bosch ..         | Ruther Glen              |
|                  |                     | "            | A. J. Good ..              | Mattwana's Hoek          |
|                  |                     | Lungsickness | F. Stockil ..              | Olivevale                |
| A. B. Koe        | Portion of Estcourt | Scab         | F. R. Moor ..              | Greystones               |
|                  |                     | Lungsickness | W. C. Stockil ..           | Glenis a                 |
|                  |                     | "            | H. L. Francis ..           | R itfontein              |
|                  |                     | Scab         | J. H. Hatting ..           | Driefontein              |
| A. J. Marshall   | Dundee ..           | "            | Messrs. Smith & Cartwright | Springfield and Thornley |
|                  |                     | "            | H. A. J. Davel ..          | Kliping                  |
| E. Varty         | Western Umvoti. .   | "            | T. J. Nel ..               | Mt. Frnistia             |
|                  |                     | "            | J. P. Van Rooyen..         | Underdunt                |
| C. J. van Rooyen | Krantzkop ..        | Lungsickness | Maqamganse ..              | Loots Hoek               |
|                  |                     | "            | Uqupu ..                   | Myoniezwe's Locat'n      |
|                  |                     | "            | Ndabane ..                 | "                        |
|                  |                     | "            | S. Johnson & Co. ..        | Inadie Store             |
|                  |                     | "            | Ndabane ..                 | Myoniezwe's Locat'n      |
|                  |                     | "            | Natives ..                 | Myoniezwe's Locat'n      |
|                  |                     | "            | Amosi ..                   | "                        |
|                  |                     | "            | Umbagaza ..                | Keat's Drift             |
|                  |                     | "            | Nyongas ..                 | Myoniezwe's Locat'n      |
| A. H. Ball       | Weenen ..           | Scab         | R. J. J. van Rooyen        | Bird Spruit              |
|                  |                     | "            | H. van Rooyen..            | Buffels Hoek             |
|                  |                     | "            | J. S. Els ..               | Scotsburg                |
|                  |                     | "            | Gangaza and others         | Buffels Hoek             |
|                  |                     | "            | G. J. van de West-huyzen   | Tiger Kloof              |
| R. Mayne         | Eastern Umvoti ..   | Lungsickness | Nkabi and others..         | Loots Hoek               |
|                  |                     | Scab         | S. C. van Rooyen ..        | Small Hoek               |
| J. Stewart       | Bergville ..        | "            | G. W. Horton ..            | Hortonradford            |
|                  |                     | "            | Macomi ..                  | Woodford                 |
|                  |                     | "            | Lunaba ..                  | Hortonradford            |
|                  |                     | Lungsickness | G. Spearman ..             | "                        |
|                  |                     | "            | Neli ..                    | Rustenburgh              |
|                  |                     | "            | O. Zunckel ..              | "                        |
| J. G. Speirs     | Impendhle ..        | Scab         | Pinda, Vete & Sobuon       | Furth                    |
| A. Brown         | Polela & Underberg  | "            | H. A. Robinson ..          | Manston's Court          |
|                  |                     | "            | J. Fell ..                 | Dunvia                   |
|                  |                     | "            | H. Blaikie ..              | Inchgarth                |
| L. Trenor        | Harding ..          | Lungsickness | Makato ..                  | The Pastures             |
|                  |                     | "            | Uyalaz is ..               | Location                 |
|                  |                     | "            | S. G. Thurston ..          | Malton                   |
|                  |                     | "            | Hitchins Bros. ..          | Thleku                   |
|                  |                     | Scab         | Makala and Jimbela         | Location                 |
| A. Hair          | City and Umgeni ..  | "            | F. Taylor ..               | Zwaartkop Location       |
|                  |                     | "            | Laduma ..                  | "                        |
|                  |                     | "            | Umkulesa..                 | "                        |
|                  |                     | "            | Jantje and others ..       | Location                 |
|                  |                     | "            | Umveli ..                  | "                        |
| B. Klusener      | Port Shepstone ..   | Lungsickness | G. Daddy ..                | Sugar Bush Cutting       |
|                  |                     | "            | Mes ash ..                 | Umtamvuna River          |
|                  |                     | "            | R. Zondi ..                | Etongaas                 |
|                  |                     | "            | Mqobo ..                   | Near Umtamvuna           |
| E. Boast         | New Hanover ..      | Scab         | C. J. Dickens ..           | Noodsberg                |
|                  |                     | "            | Parker Bros. ..            | Tetworth                 |
| A. S. Parkinson  | Lions River ..      | "            | W. M. Henderson ..         | Hilton                   |
|                  |                     | "            | Robt. Speirs ..            | Moyeni                   |

### MANGE IN HORSES EXISTS AS UNDER.

| Owner.                  | District. | Owner.     | District. |
|-------------------------|-----------|------------|-----------|
| Pinda, Vete & Sobuon .. | Impendhle | T. Fynn .. | Alexandra |

## Brands Allotted to Infected Magisterial Divisions.

The following is a list of the brands which have been allotted to the several infected Magisterial Divisions:—Durban County, D. 2; Alexandra County, A. 2; Lower Tugela, T. 2; Mapumulo, S. 2; Inanda, B. 2; Umsinga, U. 2; Dundee, X. 2; Vryheid, V. 2; Ngotshe, H. 2; Paulpietersburg, P. 2; Nongoma, G. 2; Mahlabatini, L. 2; Ndwedwe, N. 2; Weenen County, W. 2; Umvoti, F. 2; Hlabisa, K. 2; Eshowe, E. 2; Ladysmith, R. 2; Babanango, O. 2; Ladysmith, East of Line outside infected area, R 3; Utrecht, Z. 2; Krantzkop, 2 K; Umvoti Location, 2 F; Ladysmith, West of main line of Railway, R 3 on left neck; Pietermaritzburg City, 2 P; Umlazi Location (Upper Umkomanzi portion), 2 U.

## Pound Notices.

NOTIFICATION is contained in the *Government Gazette* of the sale, unless previously released, of the undermentioned live stock on the dates specified:—

### ON THE 1ST APRIL.

*Ladysmith*—(1) One black gelding, star on forehead, near hind foot white, two nicks in front left ear, tail and mane medium length, 13.3 hands high, no brands visible. (2) Running on the farm "Mintauns," near Ladysmith: black heifer, black and white under belly, two years old; information laid by A. W. Illing.

### ON THE 8TH APRIL.

*Boston*—Bay stallion, about 13.3 hands, nick out of near ear, very lame near fetlock, no brands. No value. Impounded on the 14th February, 1908, by E. E. Alborough.

*Hatting Spruit*—Bay pony, stallion, about 14 hands, branded near side S. K. Probable value, £8. Impounded on the 28th February, 1908, by R. Smith.

### ON THE 15TH APRIL.

*Bulwer*—(1) Brown ewe goat, slit back of left ear. (Impounded by Native Mahlomblo, from Bulwer Location.) (2) Black and white sow, about three months old. (Impounded from Bulwer Location by Native Nixadozeli.) (3) Running on the farm "Buckquay," Polela, and reported by Mr. J. Isbister as being too wild to be driven to the Pound: Bay mare, about 14 hands, black points, slit back of right ear, scar on right fetlock, small white mark right side of wither, about 8 years old, very wild, short tail. Value, £12 10s.

*Harding*—Three goats: two black, one red.

*Loteni* (Impendhle Division)—Bay filly, two years old, no marks or brands, about 13 hands, long tail.

*Mooi River*—Light bay mare, long mane and tail, dark indistinct brand on right flank, looks like KL. (Reported by J. van der Westhuisen).

*Vryheid*—(1) Small light brown mule, mare, indistinct brand like X on both hips, small white spot on near hip. (2) Large mare, brown, branded on hip and fore hoof N. M. 438, aged. (3) Bay gelding, branded N. M. 167 on hip.

### ON THE 6TH MAY.

*Thornville Junction*—Light mouse-coloured donkey, mare, long coat, no visible marks or brands.

*Weenen*—Young black boar pig, about two months old.



## ***Agricultural and Other Shows, 1908.***

CAMPERDOWN (Camperdown Agricultural Association).—Date not yet fixed. W. E. Allsopp, Cato Ridge, *Secretary*.

DUNDEE (Dundee Agricultural Society).—Show, 18th and 19th June. Entries close 4th June. J. McKenzie, Dundee, *Secretary*.

DURBAN (Durban and Coast Society of Agriculture and Industry).—Show, 16th, 17th, and 18th July. Entries close 12th June; late entries 28th June at double rates. John Morley, *Secretary*. (Dates given incorrectly last month.)

GREYTOWN (Umvoti Agricultural Society).—Show, 11th June. W. H. Gibbs, *Secretary*.

HIMEVILLE (Himeville Agricultural Society).—Show, 14th May. Entries close 25th April. G. Palframan, *Secretary*.

KLIP RIVER (Klip River Agricultural Society).—Date not fixed. E. V. Bambrick, Box 90, Ladysmith, *Secretary*.

PIETERMARITZBURG (Natal Poultry Club).—Show, 5th and 6th June. D. M. Dixon, Box 250, *Secretary*.

PIETERMARITZBURG (Royal Agricultural Society).—Show, 11th 12th, and 13th June. Duff, Eadie & Co, Timber Street, *Secretaries*.

RICHMOND (Richmond Agricultural Society).—Show in July: date not fixed. Cecil Williams, Richmond, *Secretary*.

UMZINTO (Alexandra Agricultural and Horticultural Association).—Date not fixed: about 9th July. Geo. Lamb, Box 68, Umzinto, *Secretary*.

WEENEN (Weenen Agricultural Society). Show, 16th June. Entries close 6th June. E. Cautherley, South Downs, Estcourt, *Secretary*.

### **SOCIETIES HOLDING NO SHOWS.**

Byrne Agricultural Association.  
Donnybrook Farmers' Association.  
Dronk Vlei Farmers' Association.  
Durban County Farmers' Association.  
Eshowe District Farmers' Association.  
Frere Farmers' Association.

Hattig Spruit Farmers' Association.  
Little Tugela Farmers' Association.  
New Hanover Agricultural Association.  
Umvoti Farmers' Association.  
Gourton Farmers' Association.  
Vryheid Agricultural Society.

The Mooi River Farmers' Association (*Secretary*: H. B. Hall, Mooi River) have not yet decided whether to hold a Show this year.

### **OTHER SOUTH AFRICAN SHOWS.**

The following dates have been fixed for Agricultural Shows in other parts of South Africa outside of Natal:—

KOKSTAD.—7th and 8th April.

OUTDSHOORN (Oudtshoorn Landbouw Tentoonstelling).—Dates of Show: 7th and 8th April. W. Taylor, P.O. Box 47, Oudtshoorn, *Secretary*.

WITWATERSRAND.—Dates of Show: 28th, 29th and 30th April, and 1st May. W. H. Poultney, P.O. Box 4344, Johannesburg, *Secretary*.

POTCHEFSTROOM.—8th April.

| HEIDELBERG.—15th April.

## **Executives of Farmers' Associations.**

**ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION.**—President: Wm. Thompson. Hon. Vice-Presidents: A. Blamey, E. W. Hawsworth, Thos. Kirkman, H. Bazley, J. L. Knight, R.M. Hon. Secretary and Treasurer: Geo. Lamb. Hon. Auditor: W. B. Brunner. Committee: W. Arnott, H. G. Arbuthnot, R. C. Archibald, R. G. Archibald, J. Bazley, A. Behrmann, W. Cooke, G. J. Crookes, R. Cruickshank, H. D. Hawksworth, H. E. Hawksworth, A. F. W. Hawksworth, R. C. Hawksworth, J. Landers, D. McAndrew, F. Nelson, C. A. Preston, Dr. Rouillard, W. A. Gilbert, Fred Blamey, Rev. B. M. Ford, S. C. Hawksworth, J. C. Landers, S. F. Crookes, J. J. Crookes, R. A. Lindsay, J. A. Cule, F. B. Preston, R. Parkin, H. Reynolds, J. B. Stewart, C. Taylor, H. H. P. Waller, J. Ross, Rev. W. C. Wilcox, Dr. W. P. Tritton.

**ALFRED COUNTY FARMERS' ASSOCIATION.**—President: A. G. Prentice, J.P. Vice-Presidents: C. Knox, J.P., L. T. Trenor, and C. A. Holwell. Hon. Secretary and Treasurer: H. C. Hitchins. Committee: C. M. Etheridge, R. Fann, J.P., V. Hitchins, S. Aitchison, J.P., W. R. Rethman, Dr. Case, J.P., H. Rethman, R. G. Mack, J. Hogg.

**BOSTON FARMERS' ASSOCIATION.**—President: Thomas Fleming. Vice-President: H. Phipson. Hon. Secretary and Treasurer, W. J. Fly, J.P.

**CAMPERDOWN AGRICULTURAL SOCIETY.**—President: John Moon, J.P. Vice-Presidents: J. Gavin and John W. Harvey, J.P. Hon. Secretary: W. E. Allsopp.

**CAMPERDOWN AND DISTRICT FARMERS' ASSOCIATION.**—President: John Moon, J.P. Vice-President: F. N. Meyer. Hon. Sec.: J. Baker. Committee: H. Baker, J. Gavin, J. W. Harvey, J.P., W. B. Turner, H. H. Hutton, C. Baker, H. E. Meyer.

**DUNDEE AGRICULTURAL SOCIETY.**—President: F. Turton, J.P. Vice-Presidents: The Minister of Agriculture, the Mayor of Dundee, Messrs. A. L. Jansen, H. Wiltshire, and T. P. Smith. Hon. Secretary and Treasurer: J. McKenzie. Committee: D. C. Pieters, D. Macphail, M. Taylor, A. W. Smallic, W. Craig, C. G. Willson, D. G. Smith, A. Grice, W. J. H. Muller, E. G. Wobnitz, G. M. de Waal, B. J. Humann, W. H. Doidge, R. Retallack, H. Ryley, H. J. Head, A. S. Pieters, R. R. Mortimer, C. Vermaak, A. E. Norman, W. V. Marshall, H. P. Handley, J. Dyson, T. J. Harvey.

**DURBAN COUNTY FARMERS' ASSOCIATION.**—Patron: J. H. Colenbrander. President: J. McIntosh. Vice-Presidents: H. Westermeyer, R. R. McDonald. Committee: F. R. W. Böhmer, G. Compton, H. Freese, W. Freese, W. Gillitt, H. W. Königkramer, H. W. Nichols, F. Schäfermann. Hon. Sec. and Treasurer: Frank J. Volek.

**ESHOWE DISTRICT FARMERS' ASSOCIATION.**—President: J. R. Pennefather. Vice-President: C. F. Adams. Secretary: T. Parkins. Treasurer: W. T. Brockwell.

**GOURTON FARMERS' ASSOCIATION.**—President: W. C. Stockil, Esq., J.P. Vice-President: M. Sandison, Esq. Hon. Secretary and Treasurer: Frederick B. Burnard, Esq.

**HATTING SPRUIT FARMERS' ASSOCIATION.**—President: J. Campbell. Vice-President: A. W. Smallic. Hon. Secretary and Treasurer: R. J. Hearn. Committee: G. Queddon, T. P. Smith, W. A. Helmer, Thos. Brookes, N. Glutz, Wm. Craig, W. R. Quedd, J. A. Brookes, W. T. Heslop, Thos. Dewar, F. Turton, W. H. Tatham, A. E. Norman, D. P. Campbell.

**HIMEVILLE AGRICULTURAL SOCIETY.**—President: Henry C. Gold, Dartford, Polela. Vice-Presidents: W. Little, F. E. Peto, G. Malcolm. Hon. Sec. and Treasurer: G. Palframan, Watermead, Polela. Executive Committee: G. Malcolm, W. S. Johnston, P. McKenzie, W. Little, G. Royston. Yard Steward: H. Brown. Auditors: T. C. Dearlove and T. E. Marriott.

**HOWICK FARMERS' ASSOCIATION.**—Chairman, Thos. Morton; Vice-Chairman, M. A. Sutton; Hon. Secretary and Treasurer, A. Clark.

**INGOGO FARMERS ASSOCIATION.**—President: Angus Wood, J.P. Vice-Presidents: G. A. Fimstone and J. Browning. Hon. Secretary and Treasurer: C. Watt.

**IXOPO AGRICULTURAL SOCIETY.**—President: F. L. Thring, J.P. Vice-Presidents: Col. W. Arnott, B.M.R., W. K. Anderson, J.P., C. E. Hancock, J.P. Committee: John Anderson, Thos. Allen, J. C. Auld, H. D. Archibald, F. S. Benningfield, S. Boyd, T. L. Clarence, F. E. Foxon, R.M., Wm. Foster, Jas. T. Foster, C. C. Foster, Geo. E. Francis, L. Gray, A. M. Greer, J.P., J. R. Greer, Wm. Gold, H. A. Hill, C. F. Harris, A. E. Keith, R. Kennedy, Geo. Martin, W. Oakes, L. J. Phipps, T. F. Remfry, J. W. Robinson, Jas. Schofield, M.L.A., D. C. Smail, A. Stone, W. R. Way, A. H. Walker, M.L.A., P. D. Webb. Hon. Sec.: G. C. Way. Hon. Ass. Sec.: A. G. Harris. Hon. Treasurer: T. Arnott.

**IXOPO FARMERS' ASSOCIATION.**—President: A. E. L. Keith, Ixopo. Vice-Presidents: Geo. Martin, Claybrooke, Ixopo; A. Kirkman, Lufafa, Ixopo. Hon. Secretary and Treasurer: Geo. E. Francis, Morningview, Ixopo. Delegates to Farmers' Union: President and James Foster. Committee: F. Remfry, R. Vause, C. E. Hancock, John Anderson, R. Greer, W. Oakes, D. Campbell, G. C. Way, James Foster.

**KLIP RIVER AGRICULTURAL SOCIETY.**—President: Walter Pepworth, J.P. Vice-Presidents: Daniel Bester, J. G. Bester, Wm. A. Illing. Secretary and Treasurer: Edward V. Bambrick (Box 50, Ladysmith). Executive Committee: A. Brink, J. Farquhar, C.M.G., M.L.A., W. C. Hattingh, J. G. Hyde, Trev. Hyde, A. L. Horsley, W. Freer, L. A. Leonard, H. Nicholson, H. C. Thornhill, Herman Illing, D. Munger, P. de Waal, J. H. Newton, D. Sparks, J.P., J. T. Francis, A. W. (Gus) Illing, G. Pinkney, W. Cochrane, George L. Coventry, and *ex officio* officers.

**KRANTZKOP FARMERS' ASSOCIATION.**—President: Capt. M. Landsberg. Vice-President: P. R. Vermaak. Hon. Sec. and Treasurer: Dr. L. L. Proksch. Committee: C. J. van Rooyen (Albany), C. J. van Rooyen (Wanerfontein), Philip Nel, J. A. G. Mare, L. M. G. van Rooyen, J. C. Martens.

**LION'S RIVER DIVISION AGRICULTURAL SOCIETY.**—President: Graham Hutchinson; Vice-President: H. Nisbet; Executive Committee: H. Nisbet, M. A. Sutton, A. J. Holmes, J. Humphries, Jno. Pole, and W. A. Lawton; Auditor: W. J. R. Harvard; Hon. Sec. and Treasurer: Arthur F. Dicks, P.O. Box 1, Howick.

**LITTLE TUGELA FARMERS' ASSOCIATION.**—President: F. van de Waal. Vice-President: F. G. King. Secretary and Treasurer: H. L. Frances. Auditor: A. D. Buchanan. Committee: R. P. Summersgill, F. W. Holmes, J. P. Wepenaar, J. J. Harding, Max Cameron.

**LOWER TUGELA DIVISION ASSOCIATION.**—President: T. G. Colne, brander. Vice-President: Lieut. Col. F. Addison. Hon. Secretary and Treasurer: H. Curtis Smith. Committee: A. S. L. Hulett, A. E. Foss, G. Stewart, J. B. Hulett.

**LOWER UMZIMKULU AGRICULTURAL ASSOCIATION.**—President: D. C. Aiken, J.P. Vice-Presidents: H. Albers and C. H. Mitchell, J.P. Hon. Secretary and Treasurer: W. J. Plows. Committee: C. Manning, J. W. Aiken, W. G. Camp, T. F. Godwin, J. Hutton, H. Norden and A. Borchard. Hon. Secretary, Show Committee: J. W. Aiken. Show Committee: A. E. Collison, A. Borchard, F. Knoop, A. Ringe, H. F. Voigts, J. Hutton, C. Manning, A. J. Lugg and H. Albers. Hon. Auditor: J. W. Aiken.

**MID-ILLOVO FARMERS' CLUB.**—Chairman: L. G. Wingfield-Stratford, J.P. Vice-Chairman: B. B. Evans. Hon. Secretary: J. W. V. Montgomery. Assistant Hon. Secretary: S. C. Phipson. Hon. Treasurer: Jos. McCullough.

**MOOI RIVER FARMERS' ASSOCIATION.**—President: R. Garland; Vice-President: C. B. Lloyd; Hon. Treasurer: H. A. Rohde; Collector: Capt. W. H. Stevenson; Auditor: Claude Scott; Hon. Secretary: H. B. Hall.

**MUDEN AGRICULTURAL ASSOCIATION.**—President: Thos. Thresh. Vice-Presidents: Wm. Lilje, E. A. Grantham. Secretary and Treasurer: C. A. Selling. Committee: Otto Rottcher, Karl Lilje, Karl Rotter, Herman Schafer, Fritz Forlage, T. Braithwaite, Ernest Rottcher, C. H. Tilbrook, Rev. H. Rottcher (Hon. Life Member).

**NEWCASTLE.**—President: F. A. R. Johnstone, J.P. Vice-President: C. Earl, J.P., Mayor of Newcastle; Angus Wood, J.P., Ingogo; O. Schwikkard, C.M.G., Newcastle. Secretary: Wm. Beardall. Treasurer: Ed. Nicols. Executive Committee: L. H. S. Jones, E. Phillips, H. C. Caldecott, C. Watson, G. Langley, W. A. Lang, W. J. P. Adendorff, J. E. de Wet, O. Davis, S. W. Reynolds, B. Pettigrew, G. W. Thomas, G. H. Bishop, H. R. Muir, M. C. Adendorff, W. Napier, P. Van Breda, Chriss Botha, G. Templer.

**NEW HANOVER AGRICULTURAL ASSOCIATION.**—President: G. C. Mackenzie. Vice-Presidents: J. C. Watt, J.P., and R. H. Oelermann. Life Member: C. A. S. Yonge, M.L.A. Secretary and Treasurer: W. D. Stewart, New



Hanover. Auditor: J. H. F. Hohls. Committee: W. N. Angus, E. Bentley, W. W. Bentley, Edward Boast, E. E. Comins, G. R. Comins, C. Crookes, jun., H. Dinkelmann, J. Duval, W. Fortmann, Dr. C. H. Herbert, J. Hillermann, J. H. F. Hohls, H. Jacobson, H. A. Light, G. C. Mackenzie, A. F. Mackenzie, T. M. Mackenzie, J. Muirhead, J. P., Oswald Muirhead, G. Moe, J. P., J. Moe, O. Moe, C. Oellermann, F. Oellermann, C. J. Oellermann, W. Ortmann, J. C. Otte, E. Peckham, J. P., J. A. Potterill, S. Peckham, C. M. Scott, Rev. J. Scott, Wm. Schröder, J. P., Owen Solomon, J. H. Smith, Riby Smith, F. Thöle, H. Vorwerk, H. F. Westbrook, W. H. Westbrook, C. Westbrook, T. Wolhuter.

NOODSBERG ROAD AGRICULTURAL ASSOCIATION. — President: Fritz Reiche, J. P.; Vice-Presidents: H. Mummbräuer, P. Rodehorst, W. Dralle, W. Wortmann; Committee: W. Bartels, F. Bosse, H. Brammer, A. J. Bruyns, H. Bruyns, Carl Dralle, H. Gebers, W. Gevers, J. H. Holley, jr, W. C. Holley, C. Hillermann, L. Koch, H. Köhler, F. E. Kuhn, M. Maister, H. Merens, A. Meyer, H. Meyer-Estorf, H. W. Meyer, K. A. Meyer, H. Misselhorn, W. Misselhorn, K. Peters, I. Pfothenhauer, G. Rabe, G. Reiche, Joh. Reiche, W. Rencken, H. Rosenbrock, H. Schmidt, K. Schmidt, Rev. Jas. Scott, K. Seele, F. J. Smith, J. Thies, W. Witthöft, P. Wortmann, A. Wortmann, F. Wortmann, H. Wortmann, Secretary: Paul Vietzen, P. O. Singletree; Hon. Treasurer: E. Beurlen.

NOTTINGHAM ROAD FARMERS' ASSOCIATION. — President: W. Henwood, J. P. Vice-President: J. King, J. P. Auditor: A. Mengens. Secretary and Treasurer: C. J. King, Nottingham Road.

PIETERMARITZBURGSCH BOEREN VEREENIGING. — President: D. P. Boshoff; Secretary: E. G. Jansen, 313, Loop Street, Maritzburg.

RICHMOND AGRICULTURAL SOCIETY — President: John Marwick. Vice-Presidents: W. P. Payn, A. W. Cooper, J. W. McKenzie and Chas. Nicholson. Honorary Treasurer: R. Nicholson. Hon. Secretary: Tom M'Crystal. Committee: J. W. T. Marwick, Evan Harries, R. A. McKenzie, F. O. Howes, H. M. Moyes, W. Comrie, Thos. Marwick, J. C. Nicholson, J. W. Flett and E. J. B. Hosking.

RICHMOND ROAD FARMERS' ASSOCIATION. — President: Thos. Stead, J. P. Vice-President: W. Mapstone. Secretary and Treasurer: W. L. Stead, New Leeds, P. O. Committee: D. Malcolm, J. Mapstone, W. P. Payne, J. James, J. Sinclair, W. S. Crouch, H. B. Boyd, W. Middleton, W. Oldfield, T. E. Horwood.

ROYAL AGRICULTURAL SOCIETY OF NATAL. — President: Sir G. M. Sutton, K.C.M.G. Vice-Presidents: W. S. Crart, Jas. King, D. C. Dick, G. J. Macfarlane, C.M.G., O. Hosking, with His Worship the Mayor, *ex officio*. Secretaries, Treasurers and Collectors: Duff, Eadie & Co., 12, Timber Street, Pietermaritzburg. Yard Superintendent: H. J. Stirton. Auditor: G. V. Lambert. General Committee: T. J. Allison, W. H. Buchanan, F. G. Burchell, W. H. Cobley, P. H. Campbell, R. Comins, W. P. Gough, E. S. Goodwill, K. H. Hathorn, K.C., T. W. J. Hall, J. Hall, A. W. Herbert, L. Line, Col. Sir D. Mackenzie, K.C.M.G., Jas. Morton, Sir T. K. Murray, Jno. Moon, W. J. O'Brien, P. Otto, R. H. Pepworth, J. F. Potterill, A. Robinson, Rev. J. Scott, P. D. Simmons, H. Solomon, W. L. Stead, H. J. Stirton, Dr. Oddin Taylor, F. W. Jameson, S. J. Mason. Executive Committee: President, Vice-Presidents and W. J. O'Brien, A. W. Herbert, W. H. Cobley, K. H. Hathorn, K.C., and Col. E. M. Greene. Members appointed by Corporation: Councillors Ireland, Sanders and Hathorn.

SLANG RIVER (UTRECHT) FARMERS' ASSOCIATION. — Chairman: P. J. Kemp; Executive Committee: J. J. Uys, J. Z. Moolman, T. J. Botha, P. J. Viljoen, P. J. Kemp; Hon. Sec. and Treasurer, Thys Uys, Utrecht P. O.

UMVOTI AGRICULTURAL SOCIETY. — President: Major T. Menne. Vice-Presidents: Theunis J. Nel, M. L. A., W. J. Slatter, W. L'Esrange. Executive Committee: Tol Nel, A. Newmarch, W. Lilje, O. Rottecher, S. C. Van Rooyen, W. Newmarch, E. J. Van Rooyen, O. Norton, I. M. Nel, J. Browning. Managers of Show Yard: J. M. Handley and N. Hunter. Hon. Auditor: W. K. Ente. Secretary and Treasurer: W. H. Gibbs.

UMVOTI FARMERS' ASSOCIATION. — President: P. R. Botha (J.'s son). Vice-President: J. M. Handley. Secretary and Treasurer: G. E. Cadle (Box 6, Greytown). Auditor: J. M. Nel. Committee: W. J. Slatter, J. G. Nel, H. F. Torlage, R. J. Landsberg, A. Newmarch, P. H. van Rooyen, A. F. Handley.

UPPER BIGGARSBERG FARMERS' ASSOCIATION. — President: W. L. Oldacre. Vice-President: G. Langley. Hon. Secretary: W. F. B. Sutherland.

UTRECHT AGRICULTURAL SOCIETY. — Chairman: L. Viljoen; Vice-Chairman: B. H. Breytenbach; Members: I. Bierman, M. M. Knight, J. H. Klopper, B. C. Hattingh, T. Botha, M. Gregory, P. L. Uys, H. P. Breytenbach; Secretary: G. J. Shawe.

UTRECHT BOEREN VEREENIGING.—President: D. J. A. van der Spuy; Secretary: G. J. Shawe, Utrecht.

VICTORIA COUNTY AGRICULTURAL SOCIETY.—President: Lieut.-Colonel F. Addison; Vice Presidents: Sir Liege Hulett, Kt., M.L.A., W. J. Thompson, Esq., J.P., J. Polkinghorne, Esq., M.L.A.; Committee: Messrs. W. H. B. Addison, G. S. Armstrong, M.L.A., C. Bishop, J.P., D. Brown, sen., J.P., W. Campbell, T. G. Colenbrander, A. E. Foss, J.P., A. S. L. Hulett, J.P., J. B. Hulett, C. Jackson, G. Nicholson, J.P., T. Polkinghorne, J. W. Perkins, J.P., E. Saunders, J.P., G. Stewart, and J. H. Stansell; Hon. Secretary and Treasurer: H. Curtis Smith (Stanger).

VRYHEID (WARD I) AGRICULTURAL SOCIETY.—President: E. Dalton. Vice-President: J. F. Potgieter. Secretary: F. Kolbe. Assistant Secretary: H. Lombaard. Committee: Secretary, Assistant Secretary, and A. von Levetzow, T. Ries, P. Grobler, F. Molman, A. Steenkamp.

WEENEN AGRICULTURAL SOCIETY.—President: Allan Stuart; Vice-Presidents: R. Garland, R. H. Ralfe, F. I. de Waal; Hon. Treasurer: F. C. Schieff; Hon. Secretary: E. Cauterley; Auditor: S. Wolff; Executive Committee: Hon. H. D. Winter M.L.A., J. W. Moor, M.L.A., D. W. Mackay, T. H. Hindle and E. L. Estrange; Manager of Show Yard: S. Vaughan; Assistant: A. Clouston.

WEENEN COUNTY HORTICULTURAL SOCIETY.—Committee of Management: The President and Treasurer of the Weenen Agricultural Society and C. J. Offord, G. W. Linfoo, T. J. Nunn, Dr. Brewitt, S. Vaughan; Hon. Secretary: E. Cauterley.

ZULULAND FARMERS' ASSOCIATION.—President: F. W. White; Vice-President: C. E. Symonds. Secretary: R. H. McAlistir. Committee: Hon. D. C. Uijls, A. W. Symonds, H. T. James, R. J. Ortepp, J. N. R. Dixon.

ZULULAND COAST FARMERS' ASSOCIATION.—President: G. H. Hulett; Vice-President: C. Hill; Hon. Secretary and Treasurer: F. Brammage, Gingshlovu.

*(The Editor will be obliged if the Hon. Secretaries will supply him with lists of the Executives of their Associations.)*

## Central Experiment Farm, Cedara.

In order to minimise interference with the general course of work on the Central Experiment Farm, Cedara, it has been found necessary to set apart one day of the week, namely, Friday, as a visitors' day.

Arrangements will accordingly be made on that day for receiving visitors and showing them round the Farm. A trap will be at Cedara Station to meet the up 9.50 a.m. train; and if intending visitors from up-country will give notice to the guard at Howick Station, on their way down, a trap will be sent to meet the train which passes through Cedara at 11.2 a.m. Visitors travelling by other trains will also be met if they will previously make arrangements by writing.

On other than the visitors' day, visitors may be received by appointment, but special attention cannot be guaranteed in regard to their being shown round.

As the catering involves such a strain upon the resources of the School of Agriculture, it has been decided to limit the number of delegates from any one Association to 25 per cent. of its membership. At least 14 days' clear notice must be given by Associations, so that there may be time to make all necessary arrangements.

In view of the fact that Parliament has refused to grant the necessary funds, the cost of railway tickets can no longer be borne by the Department of Agriculture.

All communications in connection with proposed visits to the Experiment Farm, should be addressed to the Director of Experiment Stations, Cedara.

24th September, 1907.

W. A. DEANE Minister of Agriculture

## **Fees for Agricultural Analysis.**

It is hereby notified that Farmers and others can secure analytical determinations from the Government Laboratory, Central Experiment Farm, Cedara, in accordance with the following scale of fees, which is subject to revision:—

|                                                                                | Scale I. | Scale II. |
|--------------------------------------------------------------------------------|----------|-----------|
|                                                                                | £ s. d.  | £ s. d.   |
| <b>FERTILIZERS AND FEEDING STUFFS:</b>                                         |          |           |
| Determination of 1 constituent ...                                             | 0 7 6    | 0 5 0     |
| 2 or 3 constituents ...                                                        | 0 15 0   | 0 10 0    |
| Complete analysis ...                                                          | 1 1 0    | 15 0      |
| <b>SOILS:</b> Partial analysis of a soil in relation to its fertility ...      | 1 1 0    | 0 10 6    |
| Complete analysis of a soil ...                                                | 2 2 0    | 1 1 0     |
| <b>WATER:</b> Irrigation and drainage ...                                      | 1 10 0   | 0 10 6    |
| <b>VEGETABLE PRODUCE:</b> Fodders, Ensilage, Grains, &c. ...                   | 1 1 0    | 0 15 0    |
| <b>MILK, CREAM, BUTTER:</b> Fat only ...                                       | 0 5 0    | 0 2 6     |
| "                    : Complete ...                                            | 0 15 0   | 0 7 6     |
| <b>WATTLE BARKS AND TEA:</b> Tannin ...                                        | 0 5 0    | 0 2 6     |
| <b>CATTLE DIPS:</b> Quantitative analysis of 1 to 3 principal constituents ... | 0 10 0   | 0 5 0     |
| <b>INSECTICIDES:</b>                                                           |          |           |
| Qualitative analysis each constituent ...                                      | 0 5 0    | 0 2 6     |
| Quantitative " " " " ...                                                       | 0 10 6   | 0 5 0     |

Scale No. 1 is applicable to samples handed in by Merchants and Dealers, and where trade interests are involved.

Scale No. 2 is applicable to samples forwarded by *bona fide* Farmers and Gardeners.

Samples will be accepted at the discretion of the Department, and must be properly selected and labelled.

The Department reserves the right to publish the results of any analysis performed by it; and, where such is deemed of sufficient public interest it will remain at the discretion of the Department to remit any charges hereunder.

November 22nd, 1907.

E. R. SAWER,  
Director, Experiment Stations.

## **Cows Wanted.**

WANTED urgently, cows just calved or due to calve. Old animals suitable; any breed.

Apply—P.O. Box 282,  
Pietermaritzburg.

## **Rules for Agricultural Co-Operative Societies.**

THE Department of Agriculture has for disposal, at the rate of one shilling each, copies of Model Rules for the use of Agricultural Co-operative Societies. Applications should be made to the Acting Under Secretary for Agriculture, Pietermaritzburg.



## **East Coast Fever.**

### **SLAUGHTER CATTLE.**

THE Department of Agriculture has erected abattoirs adjoining the Government Cold Stores, Maritzburg, where people will be able to forward cattle from clean and infected areas for slaughter. Killing, chilling, and freezing can be undertaken by the Department if desired, and arrangements can also be made for the forwarding by rail of meat intended for sale in markets outside Maritzburg. This will enable farmers, who wish to dispose of their stock for slaughter and find a difficulty in so doing, to have their animals killed in Maritzburg and the meat forwarded to Durban or any other market. The abattoirs will be under the personal supervision of Mr. A. R. Burford, the Manager of the Government Cold Stores, who is thoroughly experienced in this particular class of work.

The provisional abattoir charges are :—

|                             |                 |     |                                                        |
|-----------------------------|-----------------|-----|--------------------------------------------------------|
| Cattle per head             | ...             | ... | 1s., with a minimum of £3 per killing space per month. |
| Sheep                       | ...             | ... | 1½d. each.                                             |
| Pigs                        | ...             | ... | 3d. "                                                  |
| Chilling and Freezing Beef, | 1st week        | ... | 1s. 3d. per qr.                                        |
| "                           | 2nd             | "   | 1s. "                                                  |
| "                           | Remaining weeks | ... | 9d. "                                                  |
| Sheep                       | ...             | ... | per week ... 3d.                                       |
| Pigs                        | ...             | ... | 6d.                                                    |

Charges for killing and handling Cattle, and placing same in Cold Storage, if required, or meat to be taken away by customer from hanging-room :—

|                  |     |     |                                              |
|------------------|-----|-----|----------------------------------------------|
| Cattle, per head | ... | ... | 4s. each (including abattoir fee).           |
| Sheep            | ... | ... | 6d. "                                        |
| Pigs             | ... | ... | 1s. " up to 200 lbs.                         |
| "                | ... | ... | 1s. 6d. each, over 200 lbs. & up to 300 lbs. |
| "                | ... | ... | 2s. " over 300 lbs.                          |

W. A. DEANE,  
Minister of Agriculture

Department of Agriculture, Maritzburg,  
9th April 1907.

Last year we exported ox and cow hides overseas to the value of £106,123, and sheepskins to the value of £34,341. The total value of hides and skins (including goat skins) exported from Natal—both over-sea and overland—was £146,323, as compared with £78,519 in 1906.

The arrowroot crop in Queensland last year was a smaller one than that of the previous year. This is attributed to the fact that greater attention is being paid to the dairy industry, from which better returns are anticipated.

## Experiment Station Notices.

### SALE OF STOCK.

OFFERS are invited for the young dairy bulls, bred at Cedara and running on the veld, as detailed below. Inspection can be arranged to suit prospective purchasers.

#### BLACK BULLS.

- No. 3. Sire, Welsh Runt, Dam, F.1., born July 28th, 1906.  
No. 4. " " Dam, F.9., born July 29th, 1906.

#### SHORTHORN.

B.15. Sire, Earl of Oxford; Dam, Daisy (A.13) by Joe Chamberlain; born June 5th, 1906; dark red, few white spots; Dam, very good milker

B.18. Sire, Earl of Oxford; Dam, imported cow Brazil; a six gallon cow; born August 13th, 1906.

B.11. Sire, Earl of Oxford; Dam, Jennie (A.5 good milker); red and white; born July 28th, 1905.

#### DEVON.

- D.3. Dam C.13, very good milker, by Star of the West, born 22/3/06.  
D.4. Dam C.8. " " " 24/3/06.  
D.9. Dam C.8. " " " 1/4/07.  
D.10. Dam C.13. " " " 19/4/07.

### SALE OF PERSIAN RAMS.

Offers are invited for eighteen Persian ram lambs, bred at Cedara from Stud Ram No. 648; winner, 1st prize, Port Elizabeth 1906, Pietermaritzburg and Durban 1907, and selected ewes from Montague Gadd's flock, Tafelberg, C.C. Latter have given this season 100 per cent. lambs. Some of these rams have scaled 64lbs. at four months. Inspection by arrangement.

### SALE OF POULTRY.

Offers are invited for the pick of 150 cockerels: White Leghorn, White Minorcas, Buff Orpingtons, Langshans, Silver Wyandottes, Indian Game, Plymouth Rocks, Black Orpingtons etc., bred almost exclusively from last year's winners. Inspection by arrangement.

### SALE OF STEAM PLOUGHS.

Offers are invited for Two 6-Furrow Spalding-Robbins, Stump-Jumping Disc-Plougs for Steam Traction. These have had little use, and the frames are as good as new, while the Ploughs were fitted with new discs last season. Landed cost of these was £56 each at the Point. Approximate weight, 2,000 lbs.

### TREES FOR SALE.

To encourage tree-planting, transplants and seeds of forest trees are supplied by Government, so far as in stock, at the undermentioned rates, exclusive of carriage, from the Government Nursery, Central Experimental Farm, Cedara.

Transplants of Eucalyptus, Pines, Acacias, Casuarinas, Cupressus etc., about 25 trees in each tin, at 8s. 4d. per 100 trees. Trees in separate tins at 1s. each.

Transplants of scarce kinds, larger trees, or surplus stock, when available will be charged at special rates, which will be furnished on application.

Tree seeds, in variety, at 1s. per packet. Price per pound, which fluctuates, will be furnished on application.

Package and postage of seed, when required, charged 1s. per lb extra.

Orders for present or spring delivery should be addressed to the **Chief Afforestation Officer, Cedara**, and must be accompanied by a remittance in cash or postal order. Cheques cannot be accepted.

---

**PURCHASE OF TREE SEEDS.**

---

With a view to the encouragement of seed production in the Colony, offers are invited from persons having locally-grown seed of exotic trees for sale. Not less than one pound will be purchased; and a specimen bearing seed vessels or flowers should be sent for identification purposes. Offers should be made in the first instance to the Forester, Cedara.

---

**SEEDS FOR DISTRIBUTION.**

---

Seeds of the following have been secured for distribution to farmers at cost price;—Cotton, Sugar Beet, Tobacco, Rice, Lupins and Field Peas, Italian and Perennial Rye Grass, Paspalum and Cocksfoot. Varieties and prices upon application to the Farm Manager, C.X.F., Cedara.

E. R. SAWER,

Director, Experiment Stations,  
Acting Conservator of Forests.

---

---

***Employment Bureau.***

---

THE Department of Agriculture has received applications from the undermentioned, who are prepared to become assistants or apprentices on farms. The Department will be glad to hear from farmers willing to take young men as assistants, and to place them in correspondence with the various applicants. When communicating on the subject, farmers may refer to the applicants by quoting the numbers in the following list:—

109a.—Scotchman, 39 years of age, producing good references from his previous employers, desires to obtain on a farm light work, such as bookkeeping, superintending despatch of produce, &c.

No. 110a.—Englishman, 39 years of age, gardener by profession, with knowledge of farming, desires employment on a farm. Appears to be a steady and reliable man.

No. 111a.—Married man, 36, no children, desires managership of farm. Spent five years with Capt Hayes, and is well acquainted with the management of horses, including racing horses. States he has sound veterinary knowledge and understands dairy, poultry, pig, and stock farming generally. South African experience, four years Cape Colony and one year Impendhle Division, Natal. Is prepared to work for month or two for board and lodging to prove capabilities, provided sound opening at end of that time.

---

Farmers requiring good, steady farm hands would do well to communicate with Ensign Anderson, of the Salvation Army Shelter, Maritzburg, who constantly has good men at the Shelter who would be glad of employment at reasonable rates. Ensign Anderson pledges himself not to recommend for employment any but those he is satisfied will give satisfaction to their employers. He will be pleased to enter into correspondence with any farmer who may address him on the subject.

---

---

***Diamond Drilling.***

---

SOME of the departmental diamond drilling plants are at present disengaged and available for hire for boring for either minerals or water. Particulars as to terms of hire may be obtained from the undersigned.

CHAS. J. GRAY,  
Commissioner of Mines.



### Bulletins Issued by the Dept. of Agriculture.

Single copies of such as are still in print may be obtained free (excepting those with price attached) on application to the Acting Under Secretary for Agriculture, Pietermaritzburg.

No.

- 1.—“Notes on Fruit Culture,” by Claude Fuller. [1902]. (*Out of print.*)
- 2.—“Manures on the Natal Market, 1902,” by A. Pardy. [1902].
- 3.—“Insects in an Important Role,” by Claude Fuller. [1904]. (*Out of Print.*)
- 4.—“Manures on the Natal Market, 1903” by A. Pardy. [1903].
- 5.—“Weed Circular” by Claude Fuller [1905].
- 6.—“Manures on the Natal Market, 1904,” by A. Pardy. [1904].
- 7.—“Tree-planting in Natal,” by T. R. Sim. [1905]. (*Price 2s. 6d.*)
- 8.—“Agricultural Co-operation,” by E. T. Mullens. [1905]. (*Out of Print.*)
- 9.—“Potato Culture” by A. N. Pearson [1905]. (*Out of Print.*)
- 10.—“Manures on Natal Market, 1905,” by A. Pardy. [1905].
- “Agricultural Statistics, Natal, 1904-5.” [1906]. (*Out of Print.*)
- 11.—“East Coast Fever,” by S. B. Woollatt. [1906].
- 12.—“Manures on Natal Market, 1906,” by A. Pardy. [1906].
- “Agricultural Statistics, Natal, 1905-6.” [1907].

## SOUTH AFRICAN STUD BOOK.

A record of all classes of Stock: the object being to encourage the breeding of thoroughbred stock and to maintain the purity of breeds, thus enhancing their value to the individual owner, and to the country generally.

Applications for Membership and Entries of Stock should be addressed:—

- |                          |                                                        |
|--------------------------|--------------------------------------------------------|
| For CAPE COLONY ...      | J. PIKE, P.O. Box 763, Cape Town.                      |
| „ TRANSVAAL ...          | F. T. NICHOLSON, P.O. Box 134, Pretoria.               |
| „ ORANGE RIVER COLONY... | E. J. MACMILLAN, Government Buildings<br>Bloemfontein. |

## THE SOUTH AFRICAN STUD BOOK

IS OBTAINABLE OF:—

T. MASKEW MILLER,  
ADDERLEY STREET,  
CAPETOWN.

PRICE 10s. 6d.

J. PIKE,  
SECRETARY, SOUTH AFRICAN STUD BOOK ASSOCIATION.

### STOCK.

P. OTTO, J.P., SOMERVILLE, RIET VLEI, Breeder of Pure-Breed  
P. FRIESLANDS, RAMBOUILLET RAMS, AYLESBURY DUCKS,  
DORKINGS, AMERICAN BRONZE TURKEYS.

### SITUATION WANTED.

YOUNG Englishman, with thorough Continental farm training, would like Colonial experience on a progressive farm. Small salary.  
Apply, E. F. George, c/o Miller, Weedon & Co., Box 300, Durban.

## **QUIBELL'S LIQUID DIP.**

Thousands of gallons of this is used in the Colony annually.

## **QUIBELL'S POWDER DIP.**

This for several years has been sold in cases of **40 2 $\frac{3}{4}$  lb.** packets, mixing 1 to 30 gallons water, but to meet the wishes of Farmers regularly using this Dip it will in future be sold in cases containing **48 2 $\frac{1}{4}$  lb.** packets, mixing, 1st Dipping—1 to 25 gallons water; 2nd Dipping—1 to 50 gallons; thus, while in every way efficient for the eradication of scab, means a considerable saving in the cost of Dipping.

## **QUIBELL'S PASTE CATTLE DIP.**

The popularity of this famous Dip is still maintained. Its reputation for keeping Cattle and Horses in a healthy condition is known to almost every farmer.

## **QUIBELL'S Disinfectant Fluid "KEROL."**

Retains its high standard in germicidal efficiency. One bottle or drum of "Kerol" does the work of 15 bottles or drums of carbolic acid.

*It is used by the South African Governments, Municipalities, Hospitals, etc., and should be used in every Home as a preventive against Infectious Diseases, for General Sanitary Purposes, for Kennels, Poultry, Stables, etc.*

# **CHAS. W. HOLMES,**

**202, LONGMARKET STREET, PIETERMARITZBURG.**

SOUTH AFRICAN REPRESENTATIVE—

**QUIBELL BROS., Ltd., Newark (Eng.).**

# LYSAGHT'S CORRUGATED IRON

LOOKS BEST. LASTS LONGEST. COSTS LEAST

LOWEST PRICES FOR

## FENCING MATERIAL.

### Baerecke & Kleudgen,

BOX 849,

DURBAN



# E. BURMESTER,

The Leading  
JEWELLER,  
WATCHMAKER,  
and OPTICIAN.

86, Adderley Street, CAPETOWN.



3 Diamonds, 4 Diamonds, 3 Rubies, and  
35s. 3 Sapphires, £5 15s.



9ct. from 5s.  
18ct. from 14s. 6d.



All Gold  
20s.



15ct. with 1 Diamond and 1 Sapphire, £4 17s. 6d.



Real Pearls and Turquoises, 14s.

**Established 1864.**

**Write for Catalogue No. 27.**

OVER 1,000 ILLUSTRATIONS. POST FREE.



‡ Sterling Silver  
Cabinet Photo Frame, 10s.



3 Turquoises,  
7s. 6d.



Silver, 2s. 6d.  
Gold, 14s. 6d.



Sterling Silver Watch Case,  
with Watch complete, 42s.



Silver Gilt Acorn  
Hatpin 2s.

# E. BURMESTER.

# BENTLEY & VANDERPUMP'S

## CONDITION

## POWDER.



## PREVENTS HORSE SICKNESS.

### READ THE FOLLOWING TESTIMONIALS:—

DEAR SIRs,

I have used your Condition Powder and have found it to surpass anything I had tried. My horses felt the benefit of the Powder before many days, and I find that the use of the Powder for a few days from time to time, keeps them in perfect condition and free from disease of every description.

Yours faithfully, EUGENE RENARD.

DURBAN, NATAL, September 17th, 1903.

TO LENNON LIMITED, Durban.

DEAR SIRs,

For many years past I have purchased Bentley and Vanderpump's Condition Powders as a Medicine for the Horses and Mules in use at my Brick Fields, and I must say that I cannot estimate the value of the Powders sufficiently, as my stables are always free from sickness, and I have never had any serious outbreak among my stock, which I put down entirely to the regular use of your Powders.

They seem to be the only preventive of Horse Sickness that I know of.

You are at liberty to make what use you like of this letter.

Yours faithfully, J. J. JOHNS

THE BRICK YARDS, UMGENI, DURBAN, NATAL,

September 26th, 1900.

MESSRS. LENNON LIMITED, West Street, Durban.

DEAR SIRs,

I have used Bentley & Vanderpump's Horse Condition Powders continuously during the last year or years, and am fully convinced that they act as a preventive, and I have to thank them for the fact that my horse did not take sickness last season when horses died all round me.

I am never without B. & V. Powders in the stable.

Yours faithfully, H. A. JACOB.

WENTWORTH, NATAL.

September 30th, 1903.

**THIS** Powder should be given to all Horses occasionally; it keeps them in good condition by giving tone to the Stomach and purifying the blood. For Grease, Swelled Legs, Coughs and Influenza, it is the Best Remedy.

The dose is a teaspoonful given every night for a week, in a mash or feed of corn, and the horse can be worked as usual all the time, being in fact more fit

IN TINS AT 2/6, 9/- AND 15/- EACH.

May be obtained from Chemists and Store Keepers throughout S. Africa.

SOLE PROPRIETORS—

## LENNON LIMITED

Cape Town.  
Port Elizabeth.  
Johannesburg.  
East London.  
Durban.

Bulawayo.  
Bloemfontein.  
Graaff Reinet.  
Aliwal North.  
Kimberley.

Beaufort West.  
Oudtshoorn.  
Mafeking.  
Fordsburg.  
Germiston.

Wynberg.  
Paarl.  
Stellenbosch  
and  
London, England

BEWARE OF IMITATIONS.

# PEARL SOAP!

— WHAT IS IT? —

It is JUST THE BEST SOAP for all Household Purposes that can be bought. It is ABSOLUTELY PURE, therefore no INJURY TO THE CLOTHES. It gives a SWEET, FRESH SMELL to the clothes that is absent in other Soaps. It is not the CHEAPEST at the beginning, but, because it lasts longest, IT IS THE CHEAPEST IN THE END.

## PEARL SOAP

— IS —

## NATAL SOAP.

AND PACKED 3 TWIN TABLETS IN CARTON.

—:O:—

If you want to SAVE MONEY, and at the same time

**HELP NATAL ALONG,**

**Ask for Pearl Soap.**

SOLD AT 1s. PER PACKET BY ALL PATRIOTIC GROCERS.

—:O:—

If your Grocer does not stock PEARL SOAP please write to the

MANUFACTURERS . . .

**NATAL SOAP WORKS, LIMITED,  
DURBAN.**



---

# Durban's 1908 Show

---

DURBAN AND COAST SOCIETY OF AGRICULTURE AND INDUSTRY  
STOCK AND PRODUCE SHOW.

NATAL KENNEL CLUB'S DOG SHOW.

DURBAN AND COAST POULTRY CLUB'S ANNUAL POULTRY SHOW.

**3 GREAT SHOWS. 1 CHARGE OF ADMISSION.**

**1 PRIZE LIST and 1 CATALOGUE.**

*2 Days' Show.*

*1 Day's Sports.*

THURSDAY 16th, FRIDAY 17th, SATURDAY 18th JULY,

The third day, it is  
will be devoted to  
ing, Polo Jumping,

*At Durban.*

specially notified,  
the Finals of Driv-  
and Military items.

**£1,250 in Prizes.**

*Entries close Friday, 12th June, 1908.*

Late entries received up till 28th June, but at double rates to  
Members and non-Members alike.

— Please send for Prize List to —

*John Morley, Secretary 399, Smith St.*

P.O. Box  
21

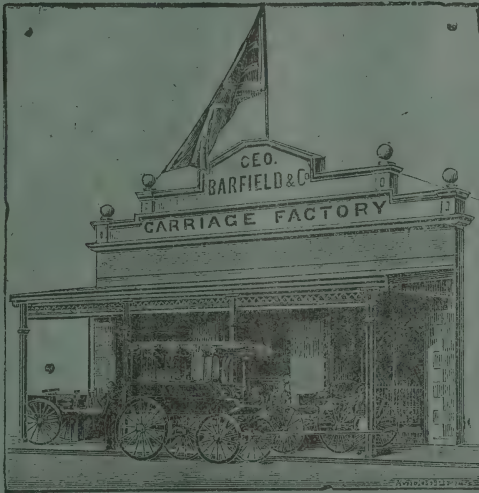
**GEORGE BARFIELD & CO.,**

TELEPHONE  
391

**212, Longmarket Street, Maritzburg.**

**Builders of High-  
Class Vehicles.  
Both for Town  
and  
Country Use.**

**New and Second-  
hand Vehicles al-  
ways on Hand.**



**Estimates given  
for all kinds of  
Carriage Work.**

**Direct Importers.**

**The Trade sup-  
plied at most rea-  
sonable Prices.**

**The Wattle Extract Co.**

**16 & 17, ANGLO-AFRICAN HOUSE,  
SMITH STREET, DURBAN.**

—BUYERS OF—

**WATTLE BARK**

**IN ANY QUANTITY. PROMPT SETTLEMENTS ON RECEIPT OF GOODS.**

**HIGHEST PRICES GIVEN. NO COMMISSION CHARGED.**

**- - CORRESPONDENCE INVITED - -**

**P.O. Box 734,**

**Telegrams : "ATLANTIC."**

---

NOW READY

---

A Fruit Grower's  
HANDBOOK

BY

CLAUDE FULLER.

---

PREPARED FOR THE USE OF FRUIT GROWERS, WITH NUMEROUS  
SELECTED ILLUSTRATIONS.

---

**Price 7s. 6d., including Postage.**

---

THE TIMES PRINTING & PUBLISHING CO., LTD.,

P.O. BOX 204.

*The Times Printing & Publishing Co., Ltd.,*

*P.O. Box 204, Pietermaritzburg.*

*Please send me.....cop.....of the book entitled "A Fruit Grower's  
Handbook," by Mr. Claude Fuller, for which I enclose £      s.      d.*

[Sign here] \_\_\_\_\_

Address \_\_\_\_\_



# ACETYLENE GAS LIGHT.

**BRIGHTEST, CHEAPEST, BEST.**

# ACETYLENE GAS LIGHT

FOR PRIVATE RESIDENCES, CHURCHES, PUBLIC BUILDINGS, ETC

# ACETYLENE GAS LIGHT.

UNRIVALLED IN SIMPLICITY, SAFETY AND ECONOMY.



For Free Estimates Write to:-

Large Quantities of

CALCIUM

CARBIDE

Always in Stock.

## L. Hirsch & Co.,

ACETYLENE GAS ENGINEERS,

151, SMITH STREET, DURBAN.

P.O. BOX 513.

# REID & ACUTT'S WOOL MART, Ltd.

MONA ROAD AND ESPLANADE, DURBAN.

## WOOL SALES.

Sales of Wool, Mohair, Hides, Skins, Horns, Wattle Bark, &c.,

**HELD EVERY WEDNESDAY, AT 12 NOON,**

And Special Sales when necessary.

**Liberal Advances made on Produce. Prompt Settlements.**

## REID & ACUTT'S WOOL MART, Ltd

MANAGING DIRECTOR - - SIDNEY A. GREEN.

Telegrams : "Woolpack."

P.O. Box 705

WM. P. ANDERSON,

Secretary



SPRAYING OXEN WITH CREOLIN AGAINST FLIES.

## Contagious Maladies

Are Successfully Resisted by

**STEPHAN'S "FIX."**

Best Whitewashing, Disinfecting,

—AND—

Tarring Machine.

**ABSOLUTELY NECESSARY  
FOR STOCK-FARMER . . .**

**Best protection against the  
flies of the cattle.**

Ask for prospectus at the administration of  
this Journal.

AGENTS ARE DESIRED.

Manufacturer:

**Stephan, at Scharley, GERMANY.**



# W. J. BELL,



Nurseryman, . . . .

Florist and

Seedsman.

## ***FRUIT TREES***

***NOW is the Time to Plant :***

***Apples, Pears, Apricots, Peaches,  
Nectarines, Plums, Medlars,  
Cherries, Almonds, Gooseberries,  
Currants, Persimmons, Walnuts,  
Spanish Chestnuts, Filberts, Figs,  
and Grape Vines.***

Send for Special Fruit Tree and Rose Catalogues, Posted Free on Application.

New Season's Vegetable, Flower and Farm Seeds.

Roses, Azaleas, Camellias, Magnolias, Rhododendrons, Ornamental Trees  
and Flowering Shrubs, Creepers, etc.

Bridal and Presentation Bouquets, Wreaths and Cut Flowers.

***195, Church St., Maritzburg***

***Nurseries :*** The "Vinery," 431, Loop Street,  
and Town Bush Valley.

Telegraphic Address : "FLORIST."



# ULLMANN BROTHERS,

THE

PRODUCE COMMISSION AGENTS,

JOHANNESBURG.

P.O. Box 3305.

Telegraphic Address: "Ulna."

OFFICE AND STORES—7, MARSHALL SQUARE (near Charge Office).

WILL SELL all kinds of Produce, as well as Live Stock, at Highest Market Prices, against Commission. All Sales are personally supervised by us, so we can guarantee perfect satisfaction. Prompt Settlement.

All other Agency Business Done. Correspondence Invited.

Our Market Report is to be found in another Column.

## BOOKS FOR FARMERS.

|                                                                                                                                    | £ s. d. | Post free<br>£ s. d. |
|------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|
| <i>Cyclopædia of American Horticulture</i> , comprising directions for the Cultivation of Crops of all Species of Fruits (4 vols.) | 5 0 0   | 5 10 0               |
| <i>Book of the Farm</i> , by Stephens (3 vols.)                                                                                    | 2 5 0   | 3 10 0               |
| <i>The Complete Grazier</i> —Farmers and Cattle Breeders' Assistant                                                                | 1 12 6  | 1 15 0               |
| <i>Cyclopædia of American Agriculture</i> (4 vols.), vols. 1 and 2 just ready                                                      | 1 5 0   | 1 7 6                |
| <i>The Farm Live Stock of Great Britain</i> , by Robert Wallace                                                                    | 1 0 0   | 1 1 6                |
| <i>The Complete Modern Farrier</i> —A Compendium of Veterinary Science and Practice, by Brown                                      | 10 6    | 11 6                 |
| <i>Feeding Farm Animals</i> , by T. Shaw                                                                                           | 12 6    | 13 6                 |
| <i>Sheep and their Diseases</i> , by W. W. Rushworth                                                                               | 7 6     | 8 6                  |
| <i>A Book of Alfalfa</i> —Its History, Cultivation, etc., by F. D. Coburn                                                          | 10 6    | 11 6                 |
| <i>Alfalfa</i> —Its Growth, Uses, etc.                                                                                             | 3 0     | 4 0                  |
| <i>A Text Book of Tropical Agriculture</i> , by H. A. Nicholls                                                                     | 6 0     | 6 9                  |
| <i>The American Fruit Culturist</i> , by J. J. Thomas                                                                              | 15 0    | 16 6                 |
| <i>A Manual of Modern Viti-Culture</i> , by G. Poëx                                                                                | 3 6     | 4 0                  |
| <i>The Farmers' and Fruit-Growers' Guide</i> , compiled by W. H. Clark                                                             | 12 6    | 13 6                 |
| <i>Citrus Fruits and their Culture</i> , by H. Hume                                                                                | 15 0    | 16 6                 |
| <i>Californian Fruits and How to Grow them</i> , by E. J. Wickson                                                                  | 15 0    | 16 6                 |
| <i>Plums and Plum Culture</i> , by F. A. Waugh                                                                                     | 7 6     | 8 3                  |
| <i>Book of the Pig</i> , by J. Long                                                                                                | 10 6    | 12 0                 |
| <i>The Feeding of Animals</i> , by W. H. Jordan                                                                                    | 6 0     | 6 9                  |
| <i>Animal Breeding</i> , by T. Shaw                                                                                                | 7 6     | 8 6                  |
| <i>The Dairyman's Manual</i> : A Practical Treatise for the Dairy                                                                  | 7 6     | 8 6                  |
| <i>Tobacco</i> : A Hand-book for Planters, etc., by C. G. W. Lock                                                                  | 6 0     | 6 9                  |
| <i>Tobacco Leaf</i> —Its Culture and Cure, by Killebrew and Myrick                                                                 | 12 6    | 13 6                 |
| <i>Coffee</i> —Its Culture and Commerce, by C. G. W. Lock                                                                          | 12 6    | 13 6                 |
| <i>Irrigation Farming</i> : A Hand-book for the Proper Application of Water in the Production of Crops, by L. M. Wilcox            | 12 6    | 13 6                 |
| <i>Irrigation</i> , with Surface and Subterranean Waters and Land Drainage, by W. G. Cox                                           | 6 0     | 6 9                  |
| <i>The Fertility of the Land</i> , by J. P. Roberts                                                                                | 6 0     | 6 9                  |

COMPLETE CATALOGUES POST FREE ON APPLICATION.

T. MASKEW MILLER, Adderley Street, Capetown.

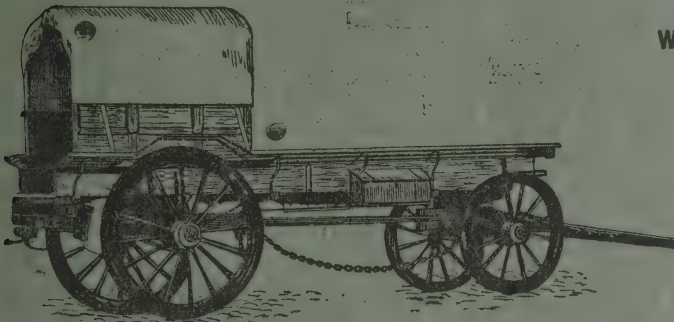
P.O. BOX 396.

# J. MERRYWEATHER & SONS, Wagonmakers, Blacksmiths, &c.,

Supply Wagons of every description on Shortest Notice and at Low Prices; Workmanship and Material Guaranteed. Tip Carts, Light Delivery Carts; also Light Spring Carts suitable for Farmers and Dairymen.

**TROLLEYS, both Heavy and Light.**

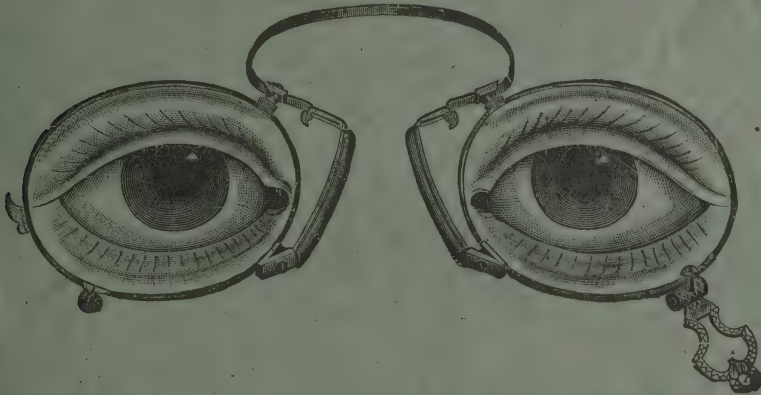
**WHEELBARROWS.**



All Sizes of Wheels  
in Stock or Made  
to Order.

Saezewood, Stinkwood, Stinkwood Shafts Sawn or Bent to Shape, Forgings, either for Ploughs, Wagons, or Mowing Machines.

**352, CHURCH STREET, PIETERMARITZBURG.**



**FARMERS and COUNTRY RESIDENTS**

— Who find their —

**EYESIGHT A TROUBLE,**

*Should make an Appointment with us BY POST.*

CONSULTING HOURS—Mornings, 10 to 1. Afternoons, 3 to 5.

**ELGIE & EMERSON,** 49, Gardiner Street, Durban,  
F.S.M.C., LOND. (BY EXAM.),

EYE SIGHT-TESTING OPTICIANS,

Per 100  
s. d

**Best Smoke-**

**less Shot**

**Cartridges 13 6**

**Martini 13 6**

**Lee Enfield 17 6**

**Mauser 17 6**

**Breechloaders  
from £5.**



**HILLSDON & HILLSDON,  
FAR - KILLING GUN AND RIFLE MANUFACTURERS,  
LONDON, BIRMINGHAM & SOUTH AFRICA.**

**Capetown Depot: The ARMOURIES, 45, Burg Street.**

**F**IREARMS bearing the name of **HILLSDON** are an emblem of soundest type of Gun Construction, and the principal features are **Stability, Simplicity, Strength, and Tremendous Killing Powers.**

Send for Illustrated Catalogue.

All New Guns and Rifles delivered Carriage and Duty Free



---

# FERTILISERS.

---

WE ARE NOW BOOKING ORDERS FOR—

**SUPERPHOSPHATE,** ALL GRADES,

**BASIC SLAG,**

**BONE MEAL,**

**POTATO MANURE,** SPECIAL,

**POTATO MANURE** FARMER'S,

**MIXED MANURES** OF ALL KINDS,

**NITRATE OF SODA,**

**MURIATE OF POTASH,**

**AND ALL OTHER MANURES.**

---

ALL OF THE BEST QUALITY AND WITH A GUARANTEED ANALYSIS.

---

WRITE FOR PRICE LIST.

---

**P. HENWOOD, SON, SOUTTER & CO.,**  
**DURBAN**

# ODAMS' Fertilizers

QUALITY UNIFORM, AND ANALYSIS GUARANTEED.

**ODAMS' "Complete" Fertilizer** for Potatoes, Forage, and General Use.—It contains the elements necessary for vigorous and healthy plant life. Where the crops are entirely removed from the land, and nothing, or but little returned to it except in the form of cattle manure or decomposed vegetable refuse a moderate application of ODAMS' COMPLETE FERTILIZER is calculated to maintain the soil in a state of fertility, and restore to productiveness soils exhausted by continuous cropping. This Manure for Potatoes is calculated to procure a PROLIFIC YIELD of Large Sound Tubers, without the assistance of Kraal Manure. ENORMOUS YIELDS HAVE BEEN RAISED by the aid of ODAMS' "COMPLETE" FERTILIZERS on Potatoes. It is the most economical Manure in use.

## ANALYSIS—

|                    |                          |
|--------------------|--------------------------|
| 18 to 20 per cent. | of Soluble Phosphate.    |
| 5 to 7             | " Undissolved Phosphate. |
| 4 to 5             | " Ammonia.               |
| 2 to 3             | " Pure Potash.           |

# ODAMS' Vitriolized Bones

(PURE DISSOLVED BONES).

Vitriolized Bones are very lasting in their effects, and greatly improve the productiveness of the land, being rich in undissolved Bone, Phosphates, and Ammonia. By the treatment the Bone is only partly dissolved, but all is in a softened state, suitable for the continuous nourishment and rapid growth of the plant. Bone thus Vitriolised will be found to give great permanence of fertility in all varieties of soils—and far superior results than Bone Dust on Mealies.

## ANALYSIS—

|                        |                   |
|------------------------|-------------------|
| 32 to 35 per cent.     | Total Phosphates. |
| 12 to 16               | " Soluble "       |
| 2.47 to 2.66 per cent. | Nitrogen equal to |
| 3 to 3 per cent.       | Ammonia.          |

Large Shipments of the above Fertilizers are now due to arrive, in time for the coming season, and large repeat orders from leading Natal Farmers have already been placed for delivery on arrival.

In the present state of Railway Traffic, it is very necessary that orders should be placed early to ensure despatch in time.

PRICE AND FULL PARTICULARS—

**W. DUNN & CO., DURBAN,**  
**AGENTS,**

**ODAMS' MANURE & CHEMICAL Co., LIMITED.**

By SPECIAL  
APPOINTMENT TO



HIS EXCELLENCY  
SIR HENRY MCCALLUM,  
K.C.M.G.

# M'CRYSTAL & HARKNESS,

**Saddlers and Harness Makers,**

186, CHURCH STREET, PIETERMARITZBURG.

Postal  
Address:

P.O. 176,

Maritz-  
burg.

## FARMERS, STUDY YOUR INTERESTS

By Buying Sound and Reliable Goods.

- - THIS CAN BE DONE - -

By placing your orders with

Tele-  
graphic  
Address

Saddlery,  
Maritz-  
burg

## LYLE BROTHERS,

**Saddlers Harness,  
and Bag Makers.**

**246, Church Street, Maritzburg.**

Whose endeavour has always been to give the best value at lowest possible prices consistent with quality  
Harness and Saddlery of every description made to order. Large Stocks on Hand.

**REPAIRS EXECUTED WITH NEATNESS AND DISPATCH.**

Branches—LADYSMITH, DUNDEE, AND VRYHEID

# J. Van Niekerk & Co.,

*Market and Commission Agents,*

Established 1890.

TELEGRAPHIC ADDRESS:—

"Niekerk."

## Cape Town.

Reference— Bank of Africa, —Market Branch.

Are prepared to receive consignments of Natal Fruit, etc.

**Personal Supervision. Prompt Settlements.**  
**Correspondence Invited.**

**Office: No. 5, Early Market, Sir Lowry Road.**



---

# HAYNE & CO.,

---

GENERAL BUYERS OF NATAL PRODUCE.

---

**Mealies, Kafir Corn, Wattle Bark,  
Mineprops, etc. etc.. . . . .**

— ADDRESS —

**72 & 74, COMMERCIAL ROAD, DURBAN.**

— ALSO AT —

**8, HARRISON STREET, JOHANNESBURG.**

---

## REUBEN BENINGFIELD & SON.

(ESTABLISHED 1844).

*Auctioneers, Valuers, and Appraisers,*

LAND, PRODUCE, ESTATE, and GENERAL COMMISSION AGENTS,

REGULAR SALES OF LIVE STOCK AND MERCHANDISE EVERY SATURDAY.

**LAND SALES MONTHLY. PRIVATE SALES INLAND DAILY.**

SALES UNDERTAKEN IN ANY PART OF THE COLONY.

---

## ROYAL MART,

*Gardiner Street, Durban.*

**REUBEN BENINGFIELD & SON.**

# The Petrolite Lamp.

PORTABLE. INCANDESCENT.

**NO LIQUID. NO WICK.**

IF OVERTURNED GOES OUT. ACCIDENTS IMPOSSIBLE.

NO WORKING PARTS. COSTS LESS THAN PARAFFIN.

SIX HOURS OF BRIGHT, STEADY 50-CANDLE-POWER LIGHT FOR ONE PENNY.

*Awarded the Keith Prize for Safety & Economy.*

INSURANCE NOT AFFECTED BY ITS USE.

(Sole Agent)  
P.O. Box 755.

John Mayhew, 2, Castle Arcade, Durban.

## HUNT, LEUCHARS & HEPBURN, LTD.,

TIMBER MERCHANTS, . . . DURBAN.

Large Stocks of TIMBER, GALVANISED IRON and all  
BUILDING REQUISITES.

Estimates given for Wood and Iron Buildings of Every Description and All  
Classes of Joinery Work.

GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.

P.O. Box 455.

Telegraphic Address: "HUNT"

And at JOHANNESBURG.

---

# G. MONHAUPT & Co.,

CABLE ADDRESS—

"MONHAUPT."

P.O. BOX 26.

TELEPHONE 308.

*The Esplanade (Corner of  
Mona Rd.),*

## *Durban, Port Natal.*

---

— Exporters of —

Wool, Mohair, Hides, Skins, Bark, Maize and other Produce.

---

Woolpacks, Grain Bags and Bark Bags always on hand.

---

— Agents for —

BUREAU VERITAS GERMANISHER LLOYD

CLASSIFICATION OF SHIPS.

ASSOCIATIONS OF HAMBURG AND BREMEN UNDERWRITERS.

— SETTLEMENT OF CLAIMS. —

---

## ***Agricultural Pests***

---

. . . WITH . . .

## ***. . . METHODS OF PREVENTION,***

---

. . . BY . . .

## **MISS E. A. ORMEROD,**

Late Consulting Entomologist to the Royal  
Agricultural Society (of England).

---

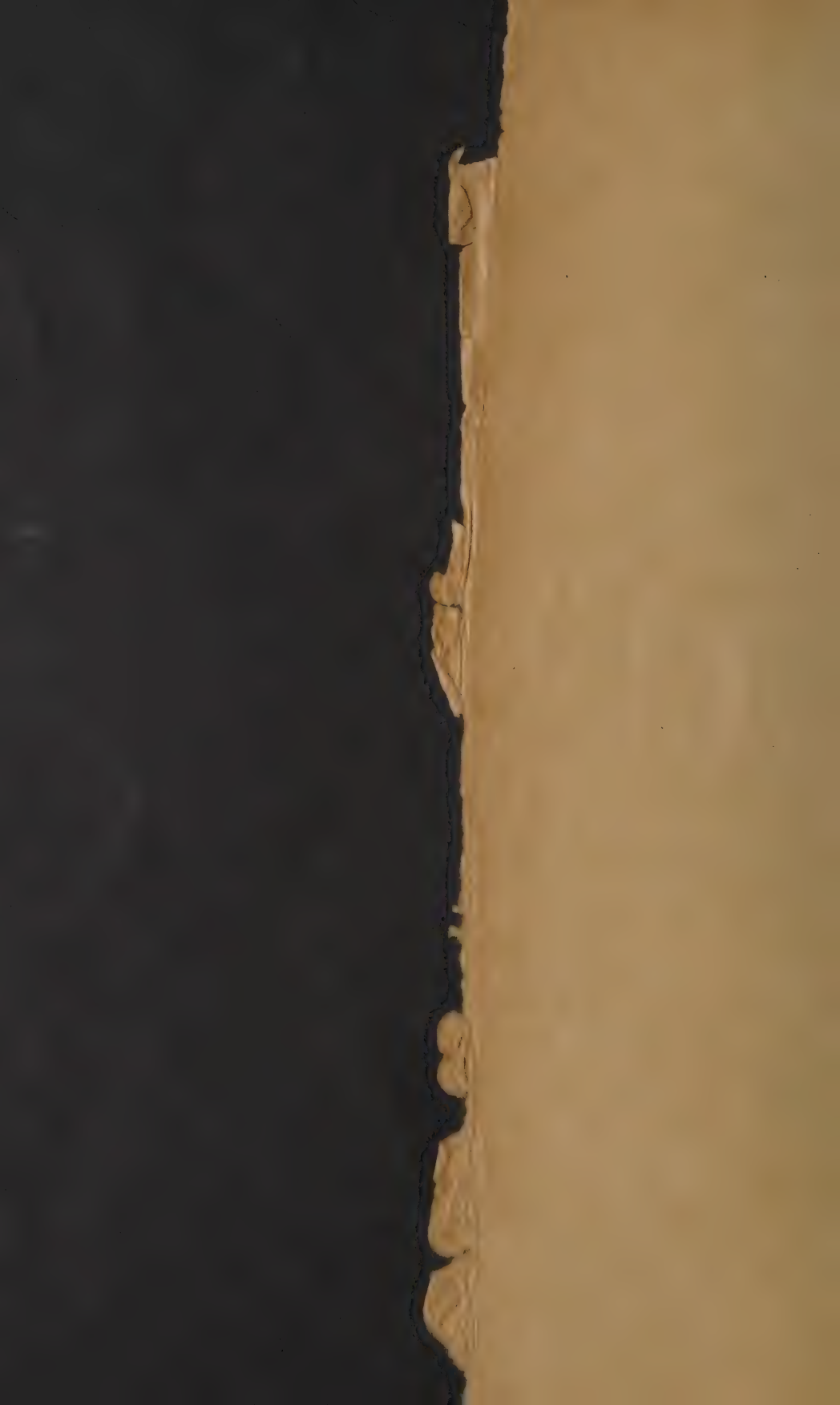
**Price 1s. By Post, 1s. 1d.**

---

***The Times P. & P. Co., Ltd., Maritzburg.***







---

**TO SOUTH AFRICAN FARMERS, SHEEP BREEDERS AND BUTCHERS.**

---

*A Common Disease of Sheep in South Africa which is often the cause of serious loss both to the breeder and the butcher.*

---

## ***Nodular Disease***

---

### ***of the Intestines in Sheep.***

---

**ITS NATURE, AND HOW IT MAY BE PREVENTED.**

**By Dr. Watkins-Pitchford, M.D.**

(Assistant Government Bacteriologist, Natal).

---

**PRICE : ONE SHILLING.**

**Post Free to any Address in South Africa, 1s. 2d.**

---

— FROM THE —

**'Times' Printing & Publishing Co., Ltd., Maritzburg.**

---

A DISEASE which is quite common in sheep throughout the whole of South Africa, but which does not appear to have been hitherto recognised and described. It occasionally causes great mortality in a flock, and is one of the reasons why Sheep cannot be satisfactorily raised in some localities.

Butchers and Breeders in South Africa have long been familiar with the appearance, in the intestines of slaughtered sheep, of little lumps of what they believe to be sand or flint embedded in the gut. In some parts of the country every sheep slaughtered is found to have these deposits, in greater or less numbers, in the intestines. When they are present even in small number the gut is quite unfit for the making of sausage skins; when they are present in large numbers the flesh of the animal is found to be so poor as to be hardly saleable.

In this pamphlet, which is illustrated by photographs, the exact nature of the disease is clearly described, how it is contracted and how it may be prevented.

A knowledge of the true nature of the disease is of great importance both to those who raise Sheep for the meat market and to Butchers.



# MOLASSINE

# MEAL

***For  
Stock  
of all  
kinds.***

**Unsurpassed by any other  
Food Condiment.**

EVERY PROGRESSIVE FARMER KNOWS  
ITS VALUE AND USES IT. . . .



**TRY IT**

on any animal in low condition and  
CONVINCE YOURSELVES. . .

Packed in 100 lb. Bags and stocked by all Produce  
Dealers.

*RAILAGE AT S.A.P. RATES.*

For Pamphlets, etc., apply to—

**The MOLASSINE CO. (South Africa),  
LIMITED,**

**BOX 400, DURBAN.**

***Factory: MOUNT EDGECOMBE.***



**THE FOOD**

for HORSES, MULES, COWS, SHEEP,  
PIGS, DOGS, and POULTRY.

# **FENCING MATERIAL**

Large Stocks of Barbed and Plain Wire  
Standards and Straining Posts. . . .

## **— GATES, —**

Cyclone Droppers (or Pickets) and Loops  
in Stock or Made to Order. . . .

Also Cyclone Patent Lever Gate.

## **CYCLONE GATE & FENCE CO., LTD.,**

315, CHURCH STREET (Opposite Market Square).

Telegrams—"CYCLONE."

BOX 289.

P.O. BOX 879.

Telegraphic Address: MILLING, DURBAN.

## **The Natal Mill Elevator Co.**

Bankers: The Natal Bank, Ltd.

**Mills: UMBILO.**

**Offices: 319, SMITH STREET, DURBAN.**

**—WE ARE—**

## **BUYERS OF MEALIES AND WHEAT**

**—IN ANY QUANTITY—**

**\* FOR CASH. \***

# GENUIKE BREECHLOADING SHOT GUNS, MAUSER, MANN- LICKER, LEE ENFIELD, FALLING BLOCK AND OTHER RIFLES.

*Our new patterns for  
the coming season are  
now ready and  
prices are re-  
duced.*

*Immediate deliveries. Carriage and Duty paid.  
Send for our beautifully illustrated General  
Catalogue of 72 pages.*

*Reliable Agents  
Wanted.*



*. . . Note the Address . . .*

**HILLSDON & HILLSDON, LTD., COLONIAL GUN WORKS  
BIRMINGHAM.**

N.B.—We take this opportunity of advising our customers that Messrs. Smith & Co., trading in Burg Street, Cape Town, as Hillsdon & Hillsdon, are no way connected with our Firm, and have no authority to take orders or collect moneys on our behalf; it is with regret, but in the interest of our business that we find it necessary to insert this notice.



# Jeyes' Disinfectants

ARE THE ONLY DISINFECTANTS USED IN THE  
ROYAL HOUSEHOLD, STABLES & KENNELS . .

**RELIABLE AND SAFE IN USE.**



**Jeyes' . .**  
**Cyllin . .**

The strongest Fluid Disinfectant known to science, 15 times stronger than Carbolic Acid, but harmless to Human Life.

A written guarantee of efficiency can be given.

*Can be used for Poultry, Horses, Cattle, etc., etc.*

THE CHEAPEST AND MOST EFFICIENT  
DISINFECTANT ON THE MARKET . .

**JEYES' DIP:** IS USED WITH GREAT SUCCESS  
(FLUID.) ALL OVER THE WORLD.

**PARTICULARS FROM:—**

**FENWICK & CO.,**  
Club Arcade, DURBAN.

## MOWERS and RAKES

## RAKES and MOWERS

**By OSBORNE.**



Both FIRST PRIZE  
Machines.



### **OSBORNE'S 1st PRIZE VERTICAL LIFT MOWER,**

with or without **REAPING ATTACHMENT.** Every device that is practicable, durable and desirable for a Mower has been combined in the construction of this splendid machine. It has a remarkable strong frame of one solid casting, and is made large enough for all kinds of cutting, consequently the axle is held in solid bearings the entire length of the frame.

**OSBORNE'S HAY RAKE,** like the Mower, has all the very latest improvements, and has long since proved itself the best on the market.

**OSBORNE'S MOWER KNIFE GRINDER** will keep the mower knives in splendid condition.

**WEARING PARTS OR RENEWALS** for all our machines, which bear a descriptive number, are **STOCKED**, and saves our clients much inconvenience and delay.

Write early for prices and particulars.

—:O:—

# *Steel Murray & Co.,*

## **Pietermaritzburg.**

# OHLENDORFF'S FERTILIZERS.

ANALYSES GUARANTEED.

Specially prepared for South African Soils and following crops:—

POTATOES

TOBACCO

GRAIN & MEALIES

VINES

ROOTS

SUGAR CANE

**SUPERPHOSPHATE—Basic Slag (all grades).**

**BONE MEAL—Vitriolized Bones, etc.**

— ALSO —

OHLENDORFF'S STERILIZED BONE MEAL & FLOUR.

FOR ALL PARTICULARS APPLY TO:—

**T. BURMAN, 99, Grey Street, DURBAN**

**VETERINARY PAPERS FOR FARMERS,**

—PUBLISHED BY—

**The "Times" P. & P. Co., Ltd.,**

**222, Church Street, and Chancery Lane, Maritzburg.**

BUTTER MAKING. ABORTION IN COWS.

LIVER ROT AND BRAXY.

WOUNDS AND CASTRATION.

LAMENESS AND HEREDITARY

PREDISPOSITION IN HORSES.

CURE OF HORSES' LEGS AND FEET.

ANTHRAX. TUBERCULOSIS.

PARASITIC BRONCHITIS IN SHEEP,

By Professor Wortley Axe.

**Price 1s., Post, 1s. 1d.**



# **The Corn Exchange.** (ESTABLISHED 1868.)

**R. MASON & SON,**  
**289, CHURCH STREET, PIETERMARITZBURG,**  
**MILLERS,**  
**Grain, Produce, and Seeds Merchants.**

**SPECIAL.**—Boer Meal, Crushed Wheat and Rolled Wheat (Kühne System).

**PIGEON FOODS**—Maple Peas, Hemp, &c., &c. Poultry and Chicken Mixtures. Thorley's Ovum.

**HORSE-FOOD.**—Rolled Oats, Wheaten Bran, Crushed Mealies, Molassine Meal, Rock Salt, Chaffed Forage and Lucerne, &c., &c., also Cow Meal.

**FARMERS' AGENCY.**—Consignments of Produce of all kinds realised to best advantages. Account Sales prompt with remittances.

## **SEEDS ! SEEDS !!**

We hold Prime Fresh Stocks of:—

**Mangel Wurzel, Swedes, Turnips, Sugar Beet,**  
**Paspalum, Italian and Perennial Ryegrass,**  
**Provence Lucerne, Rape (Dwarf Essex), Thousand**  
**Headed Kale, Cow Peas, Black Wattle,**  
**etc., etc.**

For description, mode of cultivation and prices, see our New Catalogue (free on application).

# **R. MASON & SON,**

**THE CORN EXCHANGE SEEDS DEPARTMENT,**

**289, Church Street, Maritzburg.**

---

# STEWARTS AND LLOYDS (SOUTH AFRICA) LTD.,

---

MANUFACTURERS OF WROUGHT IRON

## **TUBES AND FITTINGS**

FOR GAS, STEAM, AIR, AND WATER.

**BOILER TUBES. WELL TUBES.**



### DURBAN STORE.

Large Stocks held in Durban and Maritzburg of all Sizes  
from  $\frac{1}{4}$  in to 12 in. English and American Thread.

**BOILER TUBES** from 2 in. to 4 in.

**All Classes of Valves and Cocks Stocked.**

---

**Durban Office: 310a, SMITH STREET.**

P.O. BOX 131.

Stores: **SMITH STREET.**  
**MILNE STREET.**

Telephone No. 352.

Tele. Add.: "TUBES," Durban and  
Pietermaritzburg.

*Maritzburg Stores and Offices: McCALLUM STREET,*

# J. A. PETERS,

Forage & Corn Merchant,  
 Army Contractor,  
 184, Commercial Road,  
**'MARITZBURG,**

Has for Sale at Lowest Rates:—

|             |                                                                                               |              |
|-------------|-----------------------------------------------------------------------------------------------|--------------|
|             | <p>French Early Rose Seed Potatoes<br/>         (just arrived).</p>                           |              |
| RACE-       | Algerian Seed Oats (reputed rust-resisting).                                                  | SPECIALITIES |
| HORSE       | Lucerne Seed.                                                                                 | IN           |
| FOOD        | Compressed Fodder (American and Australian), Lucerne, Australian and American Bran, Oil Cake. | HORSE BEANS  |
| A           | Best Whole and Rolled Feed Oats.                                                              | AND          |
| SPECIALITY. | Pigeon Peas, Fowls' Food, Oyster Shell.                                                       | PIGEONS'     |
|             | Coolie Rice, Dhol.                                                                            | PEAS.        |
|             | Training and Ordinary Feed Forage always on hand, and all kinds of Produce.                   |              |

**COLONIAL PRODUCE BOUGHT AND DELIVERY TAKEN  
 AT ANY RAILWAY STATION.**



**TO FARMERS. . . .**

# *The "Times of Natal."*

## **SPECIAL NEW SCALE FOR SMALL PREPAID ADVERTISEMENTS IN PEOPLE'S COLUMNS.**

*A MOST POPULAR AND EFFECTIVE METHOD OF ADVERTISING.*

The "Times of Natal," with a view of still further popularising the paper as a medium for the insertion of "Small" Advertisements, have arranged a REVISED SCALE OF CHARGES for this class of advertisements.

Special Headings are given to "LIVE STOCK," "PRODUCE," etc., and thus Farmers announcements enjoy a particular prominence,

*This Scale only applies to advertisements accompanied by remittance. Advertisements of this class, which are not prepaid, will be charged at a higher rate,*

### **SCALE OF CHARGES.**

| NUMBER OF WORDS.          | NUMBER OF INSERTIONS. |        |         |                   |
|---------------------------|-----------------------|--------|---------|-------------------|
|                           | One.                  | Three. | Six.    | Over Six.         |
| 20                        | 1s.                   | 2s.    | 3s.     | 6d. per insertion |
| 30                        | 1s. 6d.               | 3s.    | 4s. 6d. | 9d. "             |
| 40                        | 2s.                   | 4s.    | 6s.     | 1s. "             |
| 50                        | 2s. 6d.               | 5s.    | 7s. 6d. | 1s. 3d. "         |
| Every additional 10 Words | 6d.                   | 1s.    | 1s. 6d. | 3d. "             |

## **Stud, Stock, and Farm.**

**RATES OF CHARGES.**—20 words for 3 months, 3s. 30 words for 3 months 4s. 6d. 40 words for 3 months, 6s. Intending advertisers are requested to communicate with the Publishers direct.

### **STUD.**

**P. D. KIMBER, MARITZDAAL, THE DARGLE.**—Breeder of P. Yorkshire Coach Horses, Cleveland Bays, Hackneys, and Pure-Breed Shetlands. Stallions, Mares, Young Stock, Saddle Horses, Remounts and Well-Matched Pairs always on sale. Young Horses selected privately trained to saddle or harness to suit purchasers. Also Breeder of Shorthorn Cattle.

**WILLIAM WOOD, "WOODFIELD" STUD FARM, NOTTINGHAM ROAD.**—Breeder of Pedigree and Grade South Devon Cattle (heavy milking strain). Milk register kept. Young Bulls for sale. Also Shropshire Down Sheep (prizes won last season included a championship, open to all breeds).

### **STOCK.**

**PURE-BRED MIDDLE WHITE YORKSHIRE PIGS** for Sale ; Boars and Yelts ; always on hand.—**C. HINGESTON**, Sutherlands P.O., near Maritzburg.

**PEDIGREE large Yorkshire and Tamworth Pigs**, also some half-breds. —Messrs. **MILLER & STEPHENS**, Tafira, Batstones P.O.

# THE NATAL AGRICULTURAL JOURNAL

## Of Special Interest :

NATAL'S MAIZE PROSPECTS.

THE SUNFLOWER.

NATAL TEA IN LONDON.

NATAL AGRICULTURAL UNION—ANNUAL CONFERENCE.

THE EAST COAST FEVER TICK.

WATTLE BARK ANALYSES.

NATAL'S INDUSTRIES.

Notes and Comments.—Exchange Reviews.—South African Markets.—

Oversea Maize Market.—Gardening Notes.—Weather and Crops,  
etc., etc.



PRINTED AND PUBLISHED FOR THE DEPARTMENT OF AGRICULTURE  
BY TIMES PRINTING AND PUBLISHING COMPANY, LTD.,  
PIETERMARITZBURG.

## SUBSCRIPTION :

**FIVE SHILLINGS** per annum (in advance), post free.



*It is hereby notified that all matter contained in the  
Natal Agricultural Journal  
is protected by Copyright. Newspapers desirous of  
republishing any articles may do so provided the usual  
acknowledgment be made.*

---

The Journal may be obtained from the Publishers, THE TIMES  
PRINTING AND PUBLISHING COMPANY, LIMITED, MARITZBURG, NATAL,  
upon payment in advance at any time of an Annual Subscription of 5s.  
With the exception of the Portuguese Colonies, the Journal is franked to  
all parts of South Africa. Postage to England, 2s. 6d. per Annum extra.  
Business Communications to be addressed to the Publishers.

The Journal is issued on the last Friday of every month.

Literary Communications to be addressed to the Editor, "Agricultural  
Journal," Department of Agriculture, Maritzburg.

630.5  
NA

ADVERTISEMENTS.

i.

---

# **S A F C O**

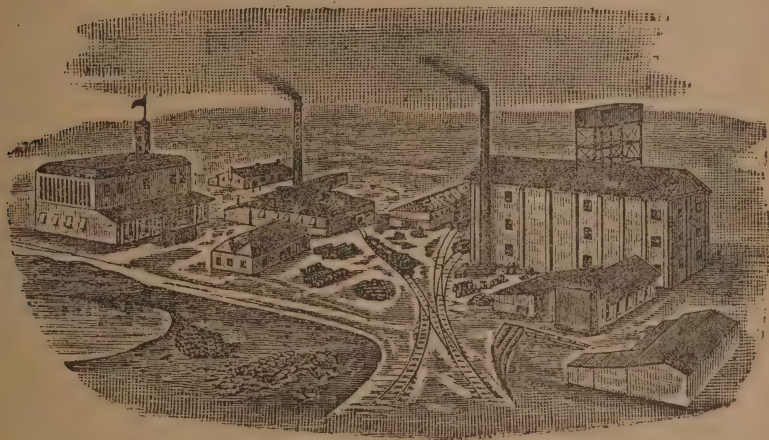
---

## **- FERTILIZERS -**

---

—ARE USED BY ALL—

**UP-TO-DATE and PATRIOTIC FARMERS.**



**SAFCO WORKS, UMBILO.**

**SAFCO Fluid Dip.**

**SAFCO Powder Dip.**

**SAFCO Cattle Lick.**

**Vaporite.**

---

### **THE SOUTH AFRICAN FERTILIZERS CO.,**

TELEGRAMS : **UMBILLO, DURBAN.** TELEPHONE : **No. 26, Durban,**  
'SAFCO, Umbilo.'

BY SPECIAL  
APPOINTMENT TO



HIS EXCELLENCY THE  
HIGH COMMISSIONER.

P.O. Box 63.

Tel. Address: "NAVAL."

# HUBERT MORISSE & CO.,

PRODUCE AND LIVE STOCK  
COMMISSION AGENTS,  
**JOHANNESBURG.**

PRODUCE & LIVE STOCK OF EVERY DESCRIPTION  
SOLD ON COMMISSION.

Cash Advances made on Goods sent for Immediate Sale.

Write for our Weekly Market Reports, sent Free on Application.

**PROMPT SETTLEMENTS.**

Correspondence Invited.

Bankers: A.B.C., Ltd.

**MAIN STORES:**

**Corner Loveday and Frederick Sts.**

**BRANCH AT OPHIRTON.**

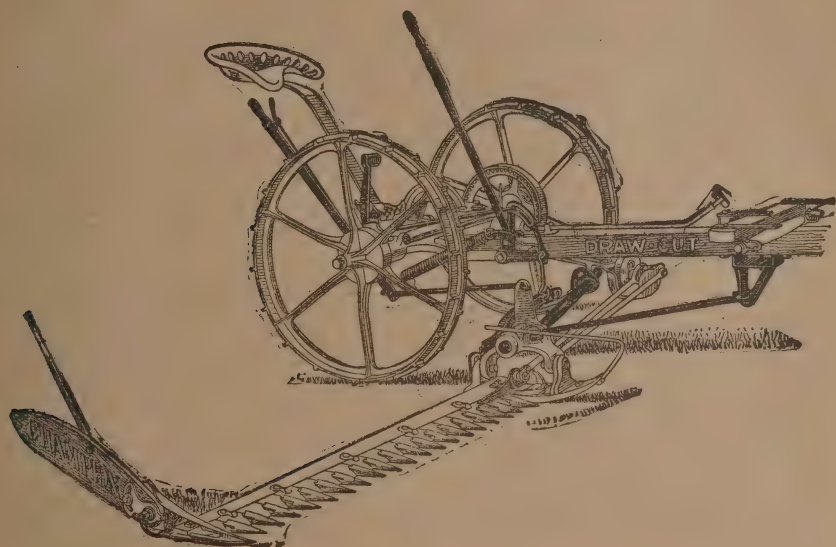


---

# **“CHAMPION” Mowers & Rakes**

---

**(BEST AND CHEAPEST).**



**Read the following Testimonial:—**

Broughton, Albert Falls,  
August 9th, 1907.

DEAR SIRS,—The “Champion” Drawcut Mower, with Reaper attached, I have used for the last **five** years, and am pleased to state that it has proved itself a **most satisfactory machine, doing its work well.**

Yours faithfully,

(Sgd.) GEORGE MOE.

---

Write for Quotations and Illustrated Catalogues to:—

**J. RAW & CO.,**  
**MARITZBURG, (SOLE AGENTS),**

**FLEET.**

|                  | Tons. |
|------------------|-------|
| S.S. Umhlali ... | 5,000 |
| " Umzumbi...     | 5,000 |
| " Umvolosi...    | 4,500 |
| " Umsinga ...    | 4,500 |
| " Umtata ...     | 3,500 |
| " Umgeni ...     | 3,500 |
| " Umvoti ...     | 3,500 |
| " Umtali ...     | 3,500 |

**FLEET.**

|                 | Tons. |
|-----------------|-------|
| S.S. Umfuli ... | 3,300 |
| " Umhloti ...   | 3,100 |
| " Umkuzi ...    | 2,800 |
| " Umbilo ...    | 2,500 |
| " Umlazi ...    | 2,200 |
| " Umzinto ...   | 2,200 |
| " Congella ..   | 2,200 |
| " Pongola ...   | 1,800 |

**FORTNIGHTLY FAST DIRECT SERVICE BETWEEN**

## **LONDON      AND      NATAL.**

**To Importers of LIVE STOCK, POULTRY & DOGS:—**

This Line of Steamers affords excellent advantages for the importation of Live Stock of all kinds, and has an unrivalled record for the carriage of the best Pedigree Live Stock and Poultry of the Colony.

The Steamers of the London Service have Saloon accommodation amidships on the Main Deck, and are fitted with Refrigerators, Electric Light, and Bells. Surgeon and Stewardess carried.

Particulars of Sailing Dates, Freight, and Passage may be had on application to:—

***KING & SONS, West Street, Durban.***

## ***Calvert's Carbolated Creosote***

Is the most reliable DISINFECTANT for all purposes. Mixes readily in cold water, and can be used as a wash for Cattle, Horses and Dogs. No farmer should be without it. Price is low and quality guaranteed. In 1 gall. Tins, 5 or 10 gall. Drums, and 50 gall. Casks. Prices on application to:—

Agent for **J. M. Wilson, 398, West Street, Durban.**  
F. C. Calvert & Co.'s Preparations.

P.O. BOX 282.

### **SURVEYS**

— Attended to by —

DAVIDSON RIEKIE, M.I.M.E., Box 188, DURBAN.

**OIL ENGINES, Pumps, Riekie's DIRECT DRIVE Hydraulic Rams, "Progress" Hand Brick Machines, Turbines, Mills, Marine Motors, Pipes, Cylinder and Farm Oils, Petrol, "Silverlight" Paraffin, Packing, etc.**

— ESTIMATES FREE. —

**D. RIEKIE & CO.,** (IRRIGATION ENGINEERS.) **235, Pine Street, Durban.**

Contractors to the Government.

**WATTLE BARK**

**MEALIES**

**AND . .**

**NATAL PRODUCE.**

We are Buyers for Spot Cash.

**Wm. Cotts & Co.,**

**Natal Bank Buildings, DURBAN**

**Produce Merchants, Importers and**

**Exporters . . . . .**

**Telegrams : "COTTS," DURBAN.**

**P.O. BOX 80, DURBAN.**



**“ROSEBUD”**

**. . FLOUR**

**IS**

**THE**

**BEST**

**FOR HOUSEHOLD USE.**

**STRENGTH, WHITENESS AND QUALITY**

**. . UNSURPASSED . .**

**TRY IT!**

**. . Stocked by all Storekeepers . .**

**WM. COTTS & CO.,**

**. . IMPORTERS.**

— FARMERS IN WANT OF —

# Haymaking Machinery

— SHOULD SEND FOR —

*McCormick's Special Catalogue*

— OR CALL AND INSPECT THE —

McCormick Mowers, Hay Rakes,  
Hay Presses, etc.,

NOW ON VIEW AT

**G. North & Son's**

SHOWROOMS,

DURBAN, MARITZBURG,  
and JOHANNESBURG.

—:O:—  
G. NORTH & SON are  
Sole Agents for all  
McCormick Har-  
vesting Machin-  
ery, and keep  
all the wear-  
ing parts.



*McCormick's Mowers, Rakes, etc.*



McCormick's

VERTICAL LIFT

MOWER and

**MCCORMICK'S**

SELF DUMP HAY RAKE

are, without exception,  
the two most perfect work-  
ing and up-to-date machines  
ever introduced. These ma-  
chines supersede all other  
makes, as they are made by the

Largest Manufacturers

in the World,

and embrace valuable improvements not to  
be found in any other makes.

—:O:—

**G. North & Son,**

P.O. Box 916.  
DURBAN.

P.O. Box 127.  
P.M.BURG.

P.O. Box 493.  
JOHANNESBURG

Scab! Scab!! Scab!!!  
is a  
Terribly Infectious Disease  
requiring a  
Thorough Remedy  
**Cooper's Dip**  
for 60 years has proved itself  
The Most Perfect Cure  
Thoroughly Safe  
and Very Cheap  
Most Lasting  
sold by all Storekeepers.





. . . THE . . .  
NATAL  
AGRICULTURAL  
JOURNAL

---

---

Published for and Edited in the Department of  
Agriculture.

---

---

**Publishers :**

THE "TIMES" PRINTING AND PUBLISHING COMPANY, LIMITED.

1908.



# CONTENTS.

---

|                                                                                                | PAGE |
|------------------------------------------------------------------------------------------------|------|
| AFFORESTATION: Monthly and Quarterly Reports ... ..                                            | 475  |
| AGRICULTURAL AND OTHER SHOWS, 1908 ... ..                                                      | 503  |
| AGRICULTURAL CONDITIONS IN MARCH: Weather, Crops and Live Stock ...                            | 490  |
| BACON FACTORY, A NEW: The Nel's Rust Proposition ... ..                                        | 458  |
| CATTLE POISONING: Effect of Incautious Spraying ... ..                                         | 472  |
| COAL AND LABOUR RETURN ... ..                                                                  | 499  |
| CORNFLOUR IN QUEENSLAND ... ..                                                                 | 377  |
| COTTON FACTORIES, CO-OPERATIVE... ..                                                           | 376  |
| DAIRY PRACTICE, MODERN. By Loudon M. Douglas ... ..                                            | 383  |
| DEPARTMENTAL NOTICES:                                                                          |      |
| Bulletins issued by the Department ... ..                                                      | 512  |
| Co-operative Societies, Model Rules for ... ..                                                 | 512  |
| Diamond Drilling ... ..                                                                        | 597  |
| E.C.F. Brands Allotted to Infected Magisterial Divisions ... ..                                | 502  |
| E.C.F. : Slaughter Cattle ... ..                                                               | 511  |
| Employment Bureau ... ..                                                                       | 510  |
| Experiment Station Notices ... ..                                                              | 508  |
| DIPS AND OINTMENTS, SHEEP: Various Kinds, Old and New ... ..                                   | 404  |
| EAST COAST FEVER, RECENT REGULATIONS ... ..                                                    | 473  |
| EAST COAST FEVER, TICKS AND. By Claude Fuller ... ..                                           | 427  |
| EXCHANGE REVIEWS ... ..                                                                        | 482  |
| FARMERS' ASSOCIATIONS, EXECUTIVES OF ... ..                                                    | 504  |
| FORESTS OF AMERICA, THE: How they are Conserved ... ..                                         | 396  |
| GARDENING NOTES FOR MAY: By W. J. Bell ... ..                                                  | 488  |
| INDUSTRIES, NATAL'S: Report of Customs Inquiry Commission ... ..                               | 409  |
| LABORATORY NOTES. By Alex. Pardy, F.C.S., Analyst ... ..                                       | 480  |
| LUCERNE, TOBACCO AND PASPALUM: Experiences at Weenen and Winterton.<br>By A. H. Bennett ... .. | 460  |



# CONTENTS—continued.

|                                                                          | PAGE |
|--------------------------------------------------------------------------|------|
| LUNGSICKNESS AND SCAB, FARMS UNDER LICENCE FOR ... ..                    | 501  |
| MACHINERY, CARÉ OF FARM ... ..                                           | 374  |
| MAIZE MARKET, OVERSEA: The Position in March ... ..                      | 496  |
| MAIZE PROSPECTS, NATAL'S ... ..                                          | 368  |
| MARKETS, SOUTH AFRICAN ... ..                                            | 492  |
| METEOROLOGICAL RETURNS ... ..                                            | 500  |
| MILK, PURE ... ..                                                        | 379  |
| MILK RECORDS, VALUE OF ... ..                                            | 372  |
| NAARTJES, EXPORTATION OF: The Conference in Durban ...                   | 462  |
| NATAL AGRICULTURAL UNION: Annual Conference, 1908: Report of Proceedings | 430  |
| NOTES AND COMMENTS ... ..                                                | 371  |
| POPLARS IN THE GLENISLA DISTRICT ... ..                                  | 378  |
| POST, PRODUCE PARCELS ... ..                                             | 375  |
| POUND NOTICES ... ..                                                     | 502  |
| OATS, EXPORT OF, FROM O.R.C. ... ..                                      | 382  |
| SUGAR INDUSTRY, QUEENSLAND ... ..                                        | 380  |
| SUNFLOWER, THE: A Useful Plant ... ..                                    | 391  |
| TANNIN EXTRACT, AMERICAN MARKET FOR ... ..                               | 371  |
| TEA, NATAL, IN LONDON: Expert Opinion and Advice to Exporters            | 401  |
| TICKS AND EAST COAST FEVER. By Claude Fuller ... ..                      | 427  |
| WATTLE BARK, ANALYSES OF. By Alex Pardy, F.C.S. ... ..                   | 480  |





WAITING TO BE STABLED.



*The Natal Agricultural Journal.*

***Natal's Maize Prospects.***

---

WHEN the agricultural history of Natal comes to be written, the year 1907 will be given an important place as marking what might almost be termed a revolution in the conditions prevailing in the cultivation of maize. That year characterised a transition almost sudden from an unstable to a relatively stable order of things. The success of a given crop depends finally upon the market available; and from a dependence upon a local market that became glutted whenever the crop was above the average we have passed to participate in what is, to us, an unlimited market overseas, a market that will take all the maize we can send it and, according to the quality of the grain and the various conditions which constitute excellence in marketing, pay us good prices therefor. What this transition really means only those who are conversant with the past agricultural history of the Colony and with the present conditions can be fully aware; and its significance will be brought out more fully when from a standpoint in the future we look back upon 1907, examine the statistics of that year and of previous and future years, and realise what possibilities were ours.

And there lie great possibilities before us—not only before Natal, but before the whole sub-continent. Mealies will grow almost anywhere, and their cultivation on a large scale, with a correspondingly increasing export, will provide an annual influx of wealth that will go far towards keeping us in a healthy economic state and will do much to avert—or at any rate to lighten—future periods of financial depression. And that is one of the things at which it should be our policy

to aim—financial stability: a strong constitution that will withstand easily all passing attacks of indisposition.

Let us see, then, what start we are making towards the attainment of this ideal.

#### A FORECAST OF THE 1908 CROP.

About the middle of March we sent out a circular letter to representative farmers in all parts of the Colony, comprising secretaries of the various agricultural bodies, and the gentlemen who are kindly acting as crop correspondents of the *Journal*. This circular letter asked for information in regard to the acreage under mealies this season as compared with that devoted to the crop last year, the yield per acre expected, and also the state of the natives' crops. (In this connection it may be mentioned that, in the re-arrangement of the Department, the editorship of the *Journal* has been combined with the office of the Statistical Clerk. In future, therefore, all matters dealing with statistics will be dealt with by the editor of the *Journal*.) Upon the replies we have received to that circular we have made a forecast which, although only very approximate at the present stage of the crop, will nevertheless serve to indicate what the harvest this year is likely to amount to. We find that the average increased area planted with mealies this season throughout the Colony is about 15 per cent. over the average for the four years 1903-1906. At the present stage of the crop, the average yield per acre anticipated is eight muids for the coast belt, 7.4 muids for the midland belt, and 5.2 muids for the upland belt (which belt includes the New Territories).

The probable crop for Natal, exclusive of Zululand, works out as follows:—

|                   | Muids.  |
|-------------------|---------|
| Coast . . . . .   | 59,200  |
| Midland . . . . . | 371,870 |
| Upland . . . . .  | 286,930 |
|                   | <hr/>   |
| Natal . . . . .   | 918,000 |
|                   | <hr/>   |

As regards Zululand, the probable average yield will be  $5\frac{1}{2}$  muids, and the crop for the whole Province (European) 11,000 muids.

The crop for the whole Colony (Natal proper, New Territories, and Zululand), to be reaped by European farmers, will thus be 929,000, or, say, 930,000 muids. This is about 30,000 muids in excess of the crop estimated by the department last year. Had it not been for the unfortunate appearance of the top-grub, we should have had a crop of 1,000,000 to 1,200,000 muids this season, as, not only did the average yield per acre promise to equal—and in some districts to exceed—that

of last year, but 15 per cent. more land was put under mealies, as compared with the average of previous years.

It must be understood that this forecast is only a preliminary one, and that it is subject to revision according to the conditions affecting the yield, as the time for harvesting approaches. The indications are, however, that this estimate of a crop of 930,000 muids may be exceeded by the actual crop reaped, for the prospects of a good yield per acre are improving in many parts of the Colony.

#### LOCAL CONSUMPTION.

A question that now arises is, what proportion of this crop of 930,000 muids will be available for export? To ascertain this, we must know what the local consumption of mealies is. The only practicable way by which we can arrive at this is to examine the production and customs figures for previous years. Let us consider those for 1907—and the figures themselves will be found of interest as indicating the proportions of our trade in mealies that year. In 1907 our imports of maize of South African production from other States of the sub-continent were:—

|                            | lbs.       |
|----------------------------|------------|
| From Cape Colony . . . . . | 2,214,553  |
| „ O.R.C. . . . .           | 35,557,431 |
| „ Transvaal . . . . .      | 2,521,649  |
| „ Basutoland . . . . .     | 1,215,261  |
| „ Bechuanaland . . . . .   | 21,300     |
| Total . . . . .            | 41,530,194 |

Our exports of South African maize to other parts of South Africa were: 25,884,792 lbs., and oversea 85,732,742 lbs., making a total of South African mealies exported from Natal of 111,618,074 lbs. Subtracting imports from exports we have Natal's probable contribution to the latter—70,087,340 lbs.

The significance of these figures is this: We imported into Natal South African produced mealies to the extent of 41,530,194 lbs.; we exported (overland and oversea) 111,617,534 lbs. of mealies, of which apparently 70,087,340 lbs., or 350,436 muids, were grown in Natal. Assuming that the crop of 900,000 muids estimated last year was approximately correct, then our local consumption was 900,000 *minus* 350,436, that is, 549,574—say, 550,000—muids, or 60 per cent. of the total crop.

Whilst it is interesting to note that the local consumption of the Natal crop last year apparently amounted to 60 per cent. of the total (and we find that the 1906 figures yield a similar result), it would be



premature to attempt to lay down any fixed relationship between the total crop and the consumption thereof each year. The whole situation is undergoing change: the destination of our exports is being deflected and the grand total of those exports is swelling to a remarkable extent; the other States of South Africa are following Natal's example in exporting overseas; prices are changing—or at any rate they promise to keep at a remunerative and fairly steady level, instead of being subject to violent fluctuations; the area under the staple is being increased; and various minor changes, the outcome of these more important ones, are taking place. "Local consumption" has, in the past, been the child of fortune: when a crop above the normal was reaped only a limited quantity could be profitably marketed, and the remainder had to be disposed of in some way on the farm. Now, however, the existence of a large market which cannot, for many years to come, be influenced by South African conditions will tend to reduce what hitherto, for want of a better name, would have been called the local consumption, and we shall accordingly find the percentage reduced from 60 last year to perhaps 50 this year and less within the next two or three years. By that time the quantity required for the local consumption will have reached its proper level, and that level will then slowly rise as the country develops.

The bearing of the natives' crops upon the European market is a phase of the situation which must not be overlooked. We refer more particularly to the frequent necessity for supplementing the natives' crops when partial failure of the latter takes place. This necessity will become more extended as time goes on, for, in the absence of any methods of renovation of worn-out land, the yield per acre must slowly but surely fall. This must have its influence upon prices and in "lean" years reduce more or less the quantity available for export overseas.

In our next issue, in revising the forecast given above, we will endeavour to indicate the average condition of the natives' crops this season, and, if possible, show to what extent purchases will have to be made from European farmers by the natives.

In conclusion, we take this opportunity of thanking all who have, by their kind co-operation and ready response to our enquiries, enabled us to make the forecast we are now publishing; and we would be glad to have any further reports that might be deemed necessary upon such changes as may take place in the prospects of the mealie crop.

## Notes and Comments.

---

### **An Anonymous Letter.**

The Director of Experiment Stations (Mr. E. R. Sawyer), Cedar, has received a letter (dated 1st April) from Ginginhlovu, in which a request is made for information regarding teosinte. The writer thereof has, however, omitted to sign his name. If he will write again to the Director, signing his name, he will receive a reply to his inquiries.

---

### **American Market for Tannin Extract.**

In connection with the efforts that are being made by the Natal Wattle Growers' Association to commence the extraction of tannin from wattle bark locally for export, some notes appearing in a recent issue of *Forestry and Irrigation* (the organ of the American Forestry Association) are of particular interest. It is stated by that journal that a famine in tan oak bark is seriously threatening the Pacific Coast tanning industry. The continual harvesting of this oak is rapidly depleting the supply, and disastrous fires in the last fifteen years have destroyed bark which at present prices would be worth, it is estimated, one and one-third million dollars. The Pacific Coast tanning industry, the journal continues, has always depended upon the native oak for tan bark. This oak sprouts from the cut stumps, and if it were not for this quality the supply would probably have been exhausted years ago.

---

In another note the journal referred to says: "The Bureau of Forestry in the Philippine Islands reports great commercial possibilities in the manufacture of tannin extract for export. It is probable few people know that the ordinary tan-barks used in the Philippines contain from 12 to 30 per cent. of tannin, being much stronger than oak or hemlock bark. The Philippine tan-barks are gathered in the mangrove or tidal swamps common along the coast, especially at the mouths of rivers. Some of these swamps are very large, ten to twenty-five square miles in area. Nearly all of the trees in the swamps yield tan-bark, the best coming from the trees commonly known as *bacao* and *tangai*. The United States imports an increasing amount every year of mangrove tan-bark from Africa. The reports of the U.S. Forest Service show that the home supply of tan-barks is decreasing rapidly and that the demand is increasing. Progressive American tanners are turning their attention to tropical tanning materials. The Philippine Bureau of Forestry has received several inquiries during the past year from firms in the United States regarding Philippine tan-barks. It seems, however, that the high freight rates will make it im-

practicable to ship the crude bark to New York. The only plant for the manufacture of cutch or mangrove tannin extract is operating very successfully in Sandakan, British North Borneo. A part of this company's output goes to New York. The Scotch firm who manufacture for such work estimate that the net profits of a plant large enough to produce five tons of solid extract per day should be over \$44,000 per year; while the cost of the machinery, in Scotland, would be about \$22,500. The Philippines, with large areas of mangrove supply, should be a very satisfactory field for such an enterprise."

---

### **Value of Milk Records.**

We have on several occasions referred in these pages to the value of milk records and the way in which their adoption is gradually extending, particularly in the United States. A constant aim of the progressive dairyman is to improve his herds, and to do this he must, to a great extent, have recourse to the keeping of records of his cows, and, watching carefully their milk production, both as to quantity and quality, gradually eliminate the less useful animals and breed only from the best cows in the herd. Proper milk records are also of great assistance to the dairyman in deciding upon the rations of his animals. If he knows exactly what a cow is doing, he can prepare the ration accordingly, and often feed more economically. Furthermore, a daily milk record warns the dairyman of the approach of sickness, and he can thus take steps to guard against such sickness. Not only in America but also in the United Kingdom is the value of milk records recognised. In this connection a lecture recently delivered by Mr. John Speir, Newton Farm, Newton, at a meeting of the Glasgow and West of Scotland Agricultural Discussion Society, and reported by *The Dairy*, is of particular interest.

---

After opening with a compliment to the Ayrshire cow as a milk-producer, Mr. Speir said that the success of the stock-breeder depended on the well-known maxim that "Like begets like." It was that factor which made pedigree so valuable, and it was pedigree which had enabled the United States to produce a bull, recently sold by auction at £1,600, from a cow which gave 1,900 lbs. of milk in one lactation, and had enabled Mr. Duthie to sell one of his Collynie-bred calves at 700 guineas. He described the showyard Ayrshire as having teats the size of a thimble, and an udder little bigger than that of an old ewe. He made no pretence to give the reason as to why this was so; it was enough for him to know that such was the case. If the Ayrshire was to continue to have the world-wide reputation which she was slowly attaining, despite the udder and teat defects of most of her exhibition animals, then all persons interested at heart in the breed must rid themselves of their fads and fancies, and settle themselves to consider actual facts. Persons not unfavourable to



the milk record scheme had repeatedly told him that the cause was not making the headway that it should, and that, if it was to be any good, it should be taken up much more enthusiastically than it had ever yet been. His answer has invariably been that he was quite pleased with the progress. The growth of the cause had been natural, and was likely to be much more permanent than if it had been forced or coddled.

---

Having acknowledged the magnanimous assistance of the Highland and Agricultural Society directorate, he affirmed that no characteristic was so strongly hereditary among dairy cattle, unless it be the kicking of those who annoyed them, as that of the propensity to produce milk. The only way to find out whether a cow was a profitable one or not was to keep a regular account of what she produced. This could be done most economically by means of milk record societies such as he was there to advocate. He cited a few instances of records to show the effect of heredity in the increase of milk production. But pedigree, he said, exercised an influence not only to produce a large quantity, but also to produce a small quantity. For breeding milk stock the worth or worthlessness of a bull was only proved three or four years after he had been introduced to the herd. Milk could not be produced without food, but food was of little value when given to half-dry cows. Estimates of the foods used in the herds of the milk record societies since the work was commenced in Scotland clearly showed that the heaviest milking herds, at least during the winter months when the food was under control, were not those which consumed most.

---

What was true in the case of the herd was more pronouncedly true in the case of individual cows, and the milk records had disclosed many instances where animals had never paid for the food they consumed. There was not the shadow of a doubt as to the superiority of the milk record method of selecting a cow over the inspection method. He ventured to predict that in the near future cows having good milk records would fetch prices hitherto unheard of, even undreamt of. A necessary corollary of milk records was a herd-book containing full details of all the best animals. For the Ayrshire breed, the first qualification for entry should be Ayrshire characteristics, after which a fairly high standard should be fixed for both quality and quantity, without which no entry should be received. Even pure descendants of registered animals should not as cows be accepted unless and until they came up to the standard. The standard for Ayrshires need not be less than 800 gallons of 3.5 per cent. of fat, or its equivalent, with certain reservations as to minimum quantity and quality. It should be so arranged that a buyer (home breeder or foreigner) should, without doubt or difficulty, be able to identify any animal as being the progeny of another, or the one bearing a certain number in the herd-book.

### **Care of Farm Machinery.**

An American farm journal states that the farmers of America buy annually over \$100,000,000 (over £20,000,000) worth of farm machinery, and adds that, according to statements made by various manufacturers, the farmer would not have to buy more than one-half of this quantity of machinery if he took proper care of it. The way in which a farmer treats his machinery speaks volumes. Poor care indicates shiftlessness, waste, lack of energy, and the buying of more implements in a short time. Good care, on the other hand, indicates prosperity, development, bank deposits, and long-lived machinery. The writer of the article in question is H. M. Bainer, Professor of Farm Mechanics of the Colorado Agricultural College; and what he has to say with regard to the care of farm machinery is of such interest and value that we need offer no apology for reproducing the greater part of his article here.

---

One of the first essentials to the handling of machinery, Professor Bainer remarks, is to thoroughly understand all parts and to be able to adjust them for best working conditions. By running a certain implement with one or more of its parts out of adjustment there is danger of damaging other parts by throwing unequal strain on them, besides ruining the part which is not adjusted. The draft of an implement is affected very much by its condition. A dull plough requires about one-fourth more energy to pull it than one which is in good condition. Poorly adjusted implements sometimes pull twice as hard as they should, and in so doing not only wear out the horses but at the same time do poor work at loss of time, with damaging results to the machine.

---

Another very important point in caring for farm machinery is to properly oil all working parts. It has been wisely said by O'Brien that "Oil is the cheapest machinery we have." The farmer must not only know how and where to oil every moving part of his machine, but he must oil it. The fact that some parts need a great deal more oil than others must not be overlooked. Some parts that are handy will receive more oil than is necessary while other parts which are not so handy are neglected almost altogether. Sometimes oil-holes will become clogged with dirt, and, while they may appear to be open, still do not convey the oil to the wearing parts; this will often result in serious damage. In other cases, certain machines have been condemned by operators simply because one or two oiling places had been entirely overlooked. Iron wearing on iron must be covered with a film of oil to prevent cutting. The oil then prolongs the life of the machine, besides making it of lighter draft. One season without shelter will damage farm machinery more than the wear caused by its use during the season. The action of the weather, which will cause a rusting of the iron and steel, as well as the rotting of the

wood parts, will seriously interfere with the working of the machinery when it is again put to use. By this exposure, certain parts are very much weakened, and the machine becomes of shorter life. When the season's work with a certain machine has been finished the machine should be thoroughly cleaned and all parts carefully wiped with oiled waste or an oiled rag. It is a good idea to coat these parts with either tallow or a good grade of axle grease. After carefully putting away the greased parts, the implement should be stored in a shed of some kind rather than be left in the open.

---

The farmer who takes proper care of his implements not only houses them and keeps them in good adjustment, but he paints them occasionally. Paint closes all cracks and keeps out the moisture. It not only preserves the wood, but the iron parts are benefited as well. It also gives the tools a much better appearance. Before applying new paint, remove all old paint that is likely to scale off and see that all parts are thoroughly clean and dry. A good grade of carriage paint will give best satisfaction in farm implements. The paint may be applied during slack times of the year at very little cost for labour.

---

### **Natal Produce Parcels Post.**

On the 1st April the Postal Department introduced an innovation which should prove of considerable benefit to the farming community throughout Natal. Parcels containing articles produced, or (if manufactured) produced and manufactured, wholly within Natal are now accepted at all post offices in the Colony for conveyance by post to any place within Natal at the following rates:—Up to  $1\frac{1}{4}$  lbs., 3d.; over  $1\frac{1}{4}$  lbs. and not more than 3 lbs., 6d.; over 3 lbs. and not more than 6 lbs., 8d.; over 6 lbs. and not more than 9 lbs., 10d.; over 9 lbs. and not more than 11 lbs., 1s. Parcels may, if desired, be registered on payment of an additional fee of 4d. No parcel weighing more than 11 lbs. will be accepted. The maximum dimensions are the same as for the Inland Parcel Post, viz., length,  $3\frac{1}{2}$  feet; length and girth combined 6 feet. Furthermore, the general regulations of the Inland Parcel Post will apply to the Natal Produce Parcel Post.

---

The new produce parcel post is for parcels from and to places within Natal only. All parcels for places outside Natal, whether containing Natal produce or not, must be prepaid at the ordinary inland parcel post rates. Parcels for conveyance by the Natal Produce Parcel Post must not be posted in a letter-box, but must be handed in at the post office counter. Senders are required to sign a declaration that the contents are the *bona fide* produce, or, if manufactured, the produce and manufacture of Natal. The following articles may, under the conditions stated above, be sent:—Butter, eggs, poultry, bread, biscuits, yeast, fruit, dried meats, jam, honey, tobacco, cigarettes, confectionery, sugar, dried and bottled



fruits, flowers, seeds, plants, vegetables, leather (unmanufactured), wool samples. The service, however, will not be restricted, and the new rates will apply to parcels containing any articles produced in the Colony as stipulated. Parcels may contain an invoice, but not a letter or anything in the nature of a letter. They must be packed in such a manner that the contents will not injure any other postal packet. The object of the Natal Produce Parcel Post is to bring the producer into direct communication with the consumer, and the officers of the Postal Department have been requested to use every means in their power to promote the success of the new system.

### ***Co-Operative Cotton Factories.***

The question of starting a cotton factory, for the ginning, baling, etc., of cotton, on co-operative lines has never been mooted in this Colony, so far as we can remember. The idea, however, possesses undoubted attractions, and would, if taken up practically, furnish an impetus to the industry here—interest in which, we regret to note, is already declining. In the *Barbados Agricultural News* of the 22nd February there are some particulars relating to the Barbados Co-operative Cotton Factory Company, Ltd., which might be of interest and value to any body of local cotton-planters who may decide to consider the advisability of starting a co-operative factory here. We learn that the first cotton factory in Barbados was opened in July, 1903, and was further enlarged in 1904. It was managed by a committee appointed by the local agricultural society, in co-operation with the Imperial Department of Agriculture for the West Indies. In view of the success that attended the cotton industry during 1903-4, the committee felt that the time had arrived when the factory might be carried on without Government or other assistance. The Barbados Co-operative Cotton Factory Company, Ltd., was registered under the Companies' Act in August, 1905, and the present factory was opened in January of last year. The building is equipped with a double expansion engine, a Stirling water tube boiler, twenty-four gins, a hydraulic baling press, and a seed disintegrator. It now forms the largest Sea Island cotton factory in the world. The working of the factory has been highly satisfactory both to the cotton growers who utilise it for the ginning of their cotton, and to the shareholders, who have received good dividends.

The latest report of the Directors, which gives the results of the working of the factory during the half-year ended September 30th, 1907, shows that, after deducting the cost of material, labour, expenses of management, and minor repairs to house, the net profit for the half-year from April 30th to September 30th, 1907, amounted to \$5,850-30, which, together with the balance brought forward from April 30th, 1907, makes a total of \$8,676-05. Of this amount, the directors have given as a bonus



to the staff the sum of \$170, equal to one month's salary; and it was agreed that the balance of \$8,506.05 be appropriated as follows:—(1) That a dividend of seven per cent., equal to 16.08c. per share, amounting to \$2,036.83, be declared; (2) that \$1,000 be transferred to the reserve fund, bringing the fund up to \$3,000; (3) that 2 per cent. of the cost of erection of the factory buildings and plant be written off; (4) that a bonus at the rate of 4c. per 100 lbs. of seed cotton be given to those persons who have sent cotton to the factory to be ginned on their account—this absorbs \$688.35; and (5) that the remainder, \$4,179.93, be left to the credit of this account. These figures will serve to show that the establishment of a cotton-ginning concern in Natal on co-operative lines could be made of mutual advantage to all concerned; but at the present stage of the industry—if we may yet call it an industry—only a very small factory need be established. The principle of the idea is that a few growers should club together and purchase such machinery as is necessary, gin and bale all their cotton at this mill, and thence ship to England. Other planters could be taken in, from time to time, and the individual expenses be thereby reduced. The same thing applies to Sisal, banana, and other fibre production: a considerable impetus would be given to these industries too by the formation of co-operative societies for the purchase of machinery.

### **Cornflour in Queensland.**

The making of cornflour in Queensland is an industry which is likely to make some considerable advances. The new duty of 2d. per lb. upon this domestic article may stimulate it, and in a great maize-growing country like the northern State, and every facility for the production of the flour, there can be few obstacles to its rapid progress. There are not many factories at present, and their output is practically absorbed by local markets. *Dalgety's Review* states that one factory near Brisbane turns out about two tons a week, and the packets, looking very similar to the imported brands, find a ready sale. The quality of the Queensland manufactures is generally very good, and will compare very favourably with foreign productions. Cornflour-making does not require much expensive machinery; the processes are simple and easily adopted. The selected maize is soaked in tanks to soften it and then it is crushed under mill-stones into a pulpy, milky-looking substance. It is then dried and ground again, and after various siftings and mixings the fine flour of commercial value is obtained. The refuse from the mill is also valuable, and might be utilised in the production of glucose, starch and other materials of marketable worth. This is done by the manufacturers in Germany and America and England, and their profit increased, but at present the waste is sold at about 1s. 6d. per sack for cattle feed. The dairymen find it a great milk-producing food for their cows. As the cornflour only consists of about 45 per cent. of the maize used, much that is serviceable must

remain, and probably when the industry becomes more widely established, branch factories for the production of starch and other useful ingredients will be associated with it. It is evident that there is scope for an important extension of cornflour production, and with the better utilisation of the waste no small profits can be made in the business.

---

### ***Poplars in the Glenisla District.***

In connection with Mr. Sawyer's article in the February issue of the *Journal* on the subject of poplar-wood for matches, a correspondent writes from Glenisla stating that his district seems to be particularly adapted to the growth of the poplar tree. At Glenisla trees were planted along the banks of the Sterk Spruit, at intervals, for about a mile and a half; they have now, our correspondent says, grown into practically a continuous line. Notwithstanding the fact that they are being freely used for all farm purposes, and especially for firewood, they are spreading for considerable distances away from the bank of the river. Many of the trees measure from four to six feet in circumference, and the first one planted on our correspondent's farm (about twenty years ago) is slightly over ten feet in width at its base and is a magnificent specimen with huge branches containing a vast amount of timber.

---

### ***Pure Milk.***

At the seventy-ninth annual meeting of the German Association of Scientists and Physicians, held at Dresden in September last, an important address on "The Treatment of Milk" was delivered by Professor Hempel. A summary of this address is contained in a recent report by the U.S. Consul at Chemnitz. It is a serious question, Professor Hempel said, in the course of his remarks, whether, in view of the brilliant success in the field of serum-therapy, we should not abandon entirely the current methods of treating milk by heating, so as to destroy possible germ growth, in favour of a process based upon the introduction of protective bacterial agencies, capable of neutralising or nullifying the action of disease germs, if present. It is, however, beyond all dispute that milk from healthy animals, collected under conditions of scrupulous cleanliness, is a better and safer food than milk which has been heated to the point at which germ life is destroyed. Intimately connected with the attainment of the hygienic dairy ideal is the problem of the transportation of milk. The larger the size of the city, the longer must be the average haul of its milk supplies, the greater the possibilities of deterioration. Furthermore, in most German cities admirably constructed dairy stables, with every possible adjunct for cleanliness and ventilation, have been erected at great expense. Their original value and their maintenance, with the higher urban charges for labour, fodder, bedding, etc., all involve a very marked addition to the normal cost of milk produced in the country districts, and

constitute a tax, levied for the purpose of delivering fresh milk with the least loss of time, to the consumer. A change to a more healthful and economic method involves the distinct organisation of milk traffic on the German railways on such a basis that well-cooled milk shall be transported in refrigerator cars attached to express trains. It likewise pre-supposes the proper agencies for the distribution, under similar temperature conditions, of such milk to consumers after reaching a city. Neither of these conditions exists as yet in Germany. The excellent arrangements for insuring cleanliness in urban dairies have not yet been supplemented by provision for preserving milk at a low temperature until it passes into the consumers' possession, often a half day, and even an entire day, after leaving the cow.

---

Doctor Hempel concludes that the only satisfactory solution of the milk problem in Germany is to be reached by Governmental requirements and inspection at each stage along the following lines:—(1) Dairy cows must be absolutely free from tuberculosis and be subject to frequent examination and tests by competent inspectors; (2) they must pass the day, when the weather permits, in the open air and in pastures; (3) they must have an abundance of good fodder, be under good care, and be cleaned each day; (4) milking should take place in a special milking room, kept scrupulously clean—a milker careless about personal cleanliness would respond to the stimulus of such environment; (5) udders should be carefully and thoroughly washed with pure water immediately before milking and dried with clean towels; (6) milk, as soon as collected from a cow, should be rapidly cooled to a point but little above that of freezing water—in summer ice or refrigerating apparatus must be used, in winter running cold water, in pipes or the like, can be employed for the purpose; (7), milk must be kept at this low temperature during transportation and until delivered to consumers, who then become responsible for the continuance of the conditions described until the liquid is required as an article of food. The address closes with a forcible plea for the installation on all railways of refrigerating cars, first, to meet the needs of the milk traffic, and, second, to facilitate the transportation of fresh meats, fish, fruits, flowers, etc.

---

The Consul asks whether Dr. Hempel's thesis could not be carried a step further. Why not transport and deliver milk in the frozen condition, he suggests, for, he points out, "exhaustive experiments have shown conclusively that pure milk, when frozen, preserves its original properties unchanged for weeks. Frozen specimens kept for over a month in a refrigerating room showed on thawing absolutely no alteration in taste, while the fact of a considerable diminution in the number of bacteria present was clearly established. Important also is the circumstance that while frozen the cream remains evenly diffused throughout the solidified



mass, which is not the case when milk is kept at a low temperature in the liquid state. To attain such results it is essential that pure, fresh milk, as soon as collected from an animal, should rapidly be cooled to the freezing point. Dirty and contaminated milk, as well as milk in which the lactic fermentation has begun, after being frozen curdles upon melting. To effectively meet the prevalent conditions in the tenement districts of cities or the needs of infants when carried on journeys, or even the requirements of a ship's commissariat, fresh milk could be frozen in the proper containers by submerging them in brine chilled far above the melting points of ice. When the milk has not only been frozen, but cooled still further to the temperature of the surrounding liquid, the flasks or other containers can be removed, inclosed in felt protectors, and conveyed to the consumers. Frozen milk prepared under such conditions will remain in the solid form for a day or more before the temperature of the entire mass can rise to the melting point. An analogous state is that of ice harvested and housed during a very cold season. As is commonly known, its keeping qualities are far superior to those of ice gathered during a mild winter."

---

### ***Queensland Sugar Industry.***

Most of our readers—at any rate, those particularly interested in sugar—are aware of the changes which have been going on in the sugar industry of Queensland, chiefly as a result of the substitution of white for coloured labour that has taken place during the last four or five years. The present situation is outlined in an interesting report lately made by the Comptroller of the Queensland Treasury, the Hon. Dr. Walter Maxwell, on the work of the central sugar factories of the State. Remarking that during the period from December, 1903, to June, 1907, white labour has taken the place completely of coloured labour, which had previously been employed upon all kinds of work, Dr. Maxwell states that, during this period the wages of white labour have been increased fully 20 per cent. in the mills of which the Treasury is in possession, and the living conditions of the workmen have been wholly reorganised at a very considerable cost. On another hand, the prices paid for cane during this period have been higher than at any other time in the history of the mills under consideration.

---

All these several considerations, however, must not allowed to conceal the fact that what has been accomplished at the mills under the control during the period specified has been due in a very notable measure to the favourable seasons that have obtained. Even with a continuance of good climatic conditions, it appears certain that the same high measure of success cannot continue, by reason of fiscal and economic changes that are now transpiring, and which are lessening, and must continue to lessen, the margin of gain. Should unfavourable climatic con-



ditions recur, then nothing can prevent less favourable and, in fact, serious financial results following. These considerations have emphasized the efforts made, on the one hand, to get the mills put into a thoroughly efficient working condition; and, on another hand, to encourage the placing of more producing settlers upon the land in order to secure an increased supply of cane. The situation, present and prospective, requires the exercise of the most careful device and economy if a measure of the recent success is to be maintained.

---

Dr. Maxwell says that the introduction of the cultivation of new varieties of cane into the districts around the mills is definitely raising the quality of the crops. These varieties were obtained from the Mackay Experiment Station, where their values are ascertained before they are distributed. Each of the mills has procured promising varieties, and is having them grown for distribution amongst the cane growers. Each year renewed attention is given at the factories to the governing factor of clarification. The Comptroller wants steam power ample for all other purposes, and also to introduce the practice of maceration with cold water. Tests conducted personally some time ago showed that the extraction coefficient of cold water is almost equal to that of hot water; and that cold water extracts a less proportion of impurities relative to the sugar extracted, which factor determines the proportion of recoverable sugar. With cane of relatively low purity, which obtains at most of the mills under the control, this is a matter of high importance. Also, in the clarification, the practice is being adopted, where practicable, of taking the lime juice into the clarifiers in its cold state. As the results of tests made some long time ago, it was demonstrated that the best clarification, especially of relatively low purity juices, is obtained by bringing the cold juices gradually to a high temperature, and finally to boiling point in the clarifiers. The undisturbed state of the juice, as it rises to the high temperature, allows the impurities to rise in a more solid layer to the top, and to be swept off without breaking, leaving a clear juice beneath. When the juice goes first into and through the 'heater,' in which course the heat is enough to coagulate certain of the impurities, and is then violently discharged into the clarifiers, a clarification results which is visibly more imperfect. Unfortunately, the equipment at some of the mills is not adequate to allow of this practice being followed. At the Gin Gin mill, the manager, Mr. Desplace, reports: "Your instructions respecting the taking of the juice cold into the clarifiers were fully carried out. The results were excellent. Unfortunately, we cannot dispense with the heater until more clarifier capacity is put in." The changes in the methods of treating the juices are making apparent the further additions to the mill equipment that are necessary in order that the best work may be done. In the report of last year, the Comptroller remarked upon the "high loss of sugar due to

preventable causes" in the Mount Bauple mill. These causes received the Comptroller's very close attention during the last crushing. As a result, the losses have been reduced by between 5 per cent and 6 per cent. upon the whole output as compared with previous years. These "preventable causes" have, doubtless, operated ever since the mill began operations, and have only been located since the control has checked the mill operations by the laboratory. There is yet room for some further improvement with the aid of additional crushing power.

---

### **Export of Oats from O.R.C.**

In the course of an interview, Mr. Harold Harvey informed a representative of the Ficksburg *Guardian* that while he was at Bloemfontein during the Show week he conversed with Commandant De Wet, the Minister of Agriculture, on the subject of the exporting of oats. The question, he said, had not been settled yet. There were several points to be considered, such as the comparative capacity of oats and mealies; different oats occupying a certain capacity and not having the same weight. It seemed that some were in favour of exporting rye rather than oats and it was difficult to ascertain what the various kinds of oats would realise. Continuing, Mr. Harvey said: We have concluded an arrangement whereby I shall join with Mr. Maurice v.d. Merwe of Hammonia. We shall sow certain varieties of oats on what is known as "the dry lands" round here, while the Minister of Agriculture will sow the same quantities and varieties on his farms under irrigation on the west of the Colony where all the big dams are. The yield will then be ascertained per acre and the London buyers will then advise the Minister of Agriculture which of those oats are best for the London markets.

---

Every animal should have a clean place in which to eat, drink and breathe. Since it eats and drinks only a part of the time, but breathes continuously, it is important that it should have pure atmosphere at all times.

---

His Excellency the Governor in Council has approved of the establishment of a Port of Entry for sheep at Riverside, on the Cape-Natal Border, under the authority of Section 15 of Law No. 48 of 1887. Mr. Jas. Cole has been appointed an Inspector in connection therewith.



A NATIVE MILKING.





## ***Modern Dairy Practice.***

By LOUDON M. DOUGLAS.

[WE have been favoured by Mr. Loudon M. Douglas, the well-known expert in dairying matters, with advance sheets of an interesting paper on the subject of modern dairy practice which he has prepared to be read before the Royal Society of Arts, London. Mr. Douglas' paper is of too great length to permit of its being printed in full in these pages, and we have accordingly been compelled to abridge it considerably. Most of the matter which we have deleted, however, bears more particularly upon English conditions; and the paper as we print it hereunder will, we feel sure, find many interested readers in this country.—ED.]

The dairy industry is on the eve of great alteration in consequence of a widely-spread propaganda, which has been gathering in force during recent years. From many quarters attacks have been made upon the procedure in connection with modern dairy practice, and it is only right to say that the majority of these attacks have been justified. The attitude of the milk producer at the present moment may be set down as hostile to the recognition of the results arrived at by scientific investigation. It is stated, for example, in a recent paper read before the Farmers' Club, that amongst the causes which contributed to the great attention at present being paid to the milk supply may be mentioned "exaggerated statements contained in sensational articles appearing in a section of the Press as to the conditions under which milk is produced, and the dangers attending its consumption." It is only right to say that no proof whatever is given of the exaggerated statements referred to, and I have been unable to find in any of the newspaper articles indicated justification for this statement. On the other hand, it has been clearly shown by such investigators as Dr. E. C. Schroeder that the milk supply is constantly being contaminated with tuberculous germs derived from cows which to all appearances are in a healthy condition. It has also been found that 91 per cent. of the people who die are affected to a more or less degree with tuberculosis, although that may not be the immediate cause of death. Considering, therefore, that this disease is so prevalent everywhere and that it may be milk-borne, it seems only right that the milk-consuming public should get an article which is pure. It is no argument to say that because certain obsolete methods of handling milk have obtained for generations, they ought, therefore, to continue. On the other hand, when they are shown to be wrong, it is quite clear that they should be forthwith abolished.

To those who were privileged to be present at the International Dairy Conference held at the Hague in the autumn of last year, it must have been evident that the enthusiastic study which the various milk problems received, not only from the scientific men who were present, but from practical farmers also, meant much progress in the dairy industry in the various countries to which they belonged. It will be of interest to quote one or two of the findings of this Conference, as indicating the trend of opinion on these matters. Thus it is recorded that the Congress was of the opinion that the milk destined for consumption in its raw state, and especially for infants' food, must be supplied from healthy and well-fed cows which have been milked dry; further, that it be well cooled after milking, and be of normal composition. The Congress was also of opinion that authorities should endeavour to

#### ERADICATE TUBERCULOSIS,

and for this purpose to institute veterinary supervision of cattle, as well as hygienic supervision of the cow-houses, and medical supervision of the persons charged with the milking and with the treatment of the milk at the farms.

Milk is the essential food of a large portion of the nation, and it has been estimated that there are forty-two gallons per head per annum consumed in one form or another. Any hidden dangers, therefore, which may lurk in it should be controlled by legal enactment. In some countries, such as Holland, there is complete control, and the milk is looked upon as being a possible vehicle in the carrying of disease, and it is treated, therefore, by pasteurisation, and in some cases by sterilisation, in order to obviate any danger. The Dutch practice is of a very interesting nature, and more especially can this be seen to advantage at a large dairy institution, run on co-operative lines, which exists at the Hague. The dairy supply of this institution is derived from 31 cow-keepers, who are also shareholders, and amounts to from 3,100 to 3,300 gallons per day. The main purpose of the dairy is the distribution of milk, and that is accomplished in a manner which is altogether admirable, not only by means of small hand-carts, but also by larger vehicles, but in any case it is always under control.

There is, of course, a considerable difference between the two aspects which characterise the milk trade in this country, namely, milk-selling and milk producing, and in modern practice the two businesses are kept entirely separate. In the Hague, as we have seen, this method has been abolished, and the farmers sell their milk themselves direct from their own depots. The advantages of such a system lie in the absolute control which it gives of the sources of supply, as it is quite obvious that veterinary inspection can be methodically carried out in the byres belonging to such an organisation as we have indicated, and it pays to retain the

services of a bacteriologist and chemists, in order to test with accuracy whether the milk is pure or not.

The disastrous effect which an impure milk supply may have cannot be too greatly commented upon. In so far as the food of children is concerned, the records of various institutions which have for their object the reduction of infantile mortality by means of a pure milk supply, show an encouraging state of affairs in the saving of lives. Unfortunately it is difficult in the United Kingdom to eliminate from the general statistics of infantile mortality what may be the percentage of deaths which are due to poisoned milk. It is notorious, however, that for fifty years in England and Wales our vital statistics show on the average the large total varying from 154 per 1,000 births to 139 per 1,000. In Scotland, during the last fifty years, the numbers per 1,000 have stood at about 120.

The ideal system in the handling of milk is that it should be produced under perfectly hygienic conditions, where the byres are free from dust, and where the milk can be cooled to a very low temperature immediately after being drawn from the cows. The ideal, however, is next to impossible in practice, as the bulk of the milk consumed in our large towns is necessarily produced at long distances from these towns. The conclusion, therefore, which the International Dairy Congress arrived at, and which we have already stated, namely, that milk should be cooled immediately after milking, is not possible in ordinary dairy practice. What, then, is the next best thing to do? There is only one possible way by which milk can be rendered innocuous, and that is by the application of heat, and this principle is being recognised to a greater extent year by year, and must ultimately become universal.

#### GERMS IN MILK.

It is a long way back to the origin of the germ theory, so far back indeed as 1675, when Antony van Leeuwenhoek, a poor Dutchman, a polisher of lenses, discovered minute organisms in rain water and in vegetable and animal infusions. Since that time there has been a steady progress in the investigation of these mysterious organisms, which are only visible to the eye by means of powerful microscopes. It was left, however, till quite within our own day to discover that milk forms a most perfect host for a great variety of virulent disease germs, and we are indebted, as all the world knows, to Pasteur for having enunciated the law that heat will altogether destroy these germs. We might say, however, that while there are many germs which find a lodgment in milk they are not necessarily all of a disease-producing or pathogenic character. Many of them are quite benign, the principle being, of course, lactic acid. The presence of lactic acid or "souring" is due to the breaking up of the milk sugar, and this constitutes  $4\frac{1}{2}$  to 5 per cent. of the milk. It may, therefore, be argued that if we apply heat as has been suggested, we

will also destroy the lactic acid bacteria, and this would be danger in itself, inasmuch as they act as sentinels in the milk. Their presence in fresh milk serve to warn the consumer that a period has been reached in the age of the milk at which it may be described as unwholesome. It is quite easy, however, to overcome this objection, as lactic acid bacteria can be isolated, and after pasteurisation of the milk some of these can be added to the milk again, so that they will be the only bacterial vegetation present.

This involves, however, a refinement of dairy practice which can only be attained through the education of those who practice dairying, and it is in this respect that the future practice will differ very much from the past, in consequence of the admirable training which is now available at the various dairy institutes and agricultural colleges throughout the country in the theory and practice of dairying.

#### COMPOSITION OF MILK.

It may be worth while at this point just to mention briefly what the composition of milk is, and how it comes to pass that a knowledge of its composition is so essential. Cows' milk, which is the commodity that we are concerned with here, consists of water, fats, albumenoids, or substances containing nitrogen, sugar and ash, each one of these being present in pretty constant proportions. The percentages may be given as follows:—

|                   |                 |
|-------------------|-----------------|
| Water . . . . .   | 87.25 per cent. |
| Fat . . . . .     | 3.50    "       |
| Casein . . . . .  | 3.50    "       |
| Albumen . . . . . | 0.50    "       |
| Sugar . . . . .   | 4.50    "       |
| Ash . . . . .     | 0.75    "       |

It is obvious that, in dealing with a substance like this, which is very complex in its character, there should be some previous knowledge as to the results which may be obtained by any particular procedure, and at this point it is well to state that the complex nature of milk is far from being completely understood. As a consequence we hear various opinions stated, even amongst scientific observers. It is, for example, asserted that complete sterilisation means the destruction of the food properties which milk contains. It has also been stated that the digestive enzymes are completely destroyed by sterilisation. If that is so, then it is surely possible to replace these digestive enzymes so as to again restore the digestive properties. Whether that may be attainable or not, however, has not yet been determined, but this we do know, that we must look upon milk, as indeed upon all other dairy products, as belonging to a class of foods in which there are no waste substances so far as the



human economy is concerned, and each component part, separately or in combination, is totally consumed within the system. It is this fact that renders the necessity for absolute purity a very real one, and hence we come to the conclusion that it is not only necessary for the modern dairyman to understand the composition of milk, but also to understand its possible dangers, and whatever methods may be available for averting these.

#### AN UP-TO-DATE DAIRY.

The dairyman who would conduct his business so as to satisfy the requirements of modern science must pasteurize all his milk, and as this is a process which is capable of being misunderstood, I think that the best way to arrive at a knowledge of the matter will be simply to describe what takes place in an up-to-date dairy.

If we assume that milk has to be delivered in a town where there are either very few or no cow-sheds, then we must proceed to the farm where the milk is produced. Here much trouble may be avoided by the proper attention to hygienic conditions, as prevention is better than cure in this matter perhaps more than in most others. The milk should be drawn from the cow by attendants who are cleanly in their habits, and the udders should be cleansed before milking. In some cases, even brushing of the animals' hides is resorted to, and in the Swedish dairy to which we referred at the beginning, which is tuberculosis-free, it is necessary for anyone going into the dairy to render their boots sterile by dipping them into a solution of antiseptic before proceeding inside. When the milk is drawn, the first should, of course, be either entirely rejected, or should be dealt with separately, as it has been shown that the first drawn milk is teeming with bacteria. The milk, on the other hand, in the interior of the udder is perfectly sterile, and this even may be the case, we admit, when an animal is suffering from generalised tuberculosis. If the milk is drawn under the conditions suggested, and cooled at once by means of refrigerating plant, then there is little liability of its becoming dangerous within a reasonable period. The difficulty, however, is that in our large cities the milk supply has to be obtained from a long distance, and this involves keeping the milk cool during transit. That also is quite attainable by means of refrigerated wagons, but the difficulty then arises as to the cost of transport under such condition. The railway companies naturally object to any method of transport which will increase their expenditure, and if such wagons were cooled by either ice or travelling refrigerating machines, there is no doubt that a considerable addition would be made to the cost of carrying. It is, therefore, evident that in a great number of cases when milk arrives at a town's dairy it arrives in a condition when it is charged with bacteria, which have been taken up from the air, dust, or general surroundings, during the journey. We have already emphasized the fact that it does not necessarily follow that

these bacteria are injurious. On the other hand it is quite possible that they may be harmful, as the methods of ascertaining the presence of disease in cows are not of a very perfect character, and, as general inspection of country byres is not complete, then we are bound to assume that the milk as it arrives in a town is contaminated. The mere fact that there is a possibility of tuberculosis of the udder existing is in itself a hidden danger which must be dealt with. If there should be one animal in a herd suffering from tuberculosis of the udder, then it is quite plain that the whole supply from such a source constitutes a danger. Hence, on arrival in a town, it must be dealt with so as to destroy these and any other germs, such as the organisms of measles, diphtheria, fever and others which may be milk-borne, and to which milk presents a ready means of transmission and propagation.

In a modern dairy the milk is received, and is then run through a strainer, of which there are many designs in existence. From the strainer the milk falls into a receiving tank, where the total bulk is all mixed together up to the capacity of the tank. From this tank it falls into the receiver of a pasteuriser, in which it is heated to a temperature of 176 degs. Fahr., which is a temperature beyond the thermal death point of pathogenic germs. It is necessary, however, to observe that this heating must be done quickly, otherwise a certain taste is imparted to the milk which is objectionable. The taste may be due to the caramelisation of the milk-sugar, and to many palates this fact may render the milk objectionable. Pasteurisers, therefore, are made so that the milk flows in at the bottom, and is elevated by means of rotating arms, which cause the milk to run over a heated paraboloid surface, and is then discharged at the top, and at once is passed over a cooler. In modern dairy practice it has been found desirable to take advantage of the cooling effect of water as a primary cooling agent, it being quite obvious that where water is available it is necessarily the cheapest cooling medium. It is, therefore, wise to provide what is termed a "primary cooler," in which water is circulated, and over which the milk flows after being discharged from the pasteuriser. Passing from the primary cooler, we then have a secondary cooler, which is attached to the refrigerating machine. The refrigerating machine is used to cool an unfreezable brine, which is circulated through the secondary cooler at a temperature approaching freezing point. The same effect is obtained as with the water, namely, that the milk flowing from the primary cooler is at once cooled to within 4 degs. Fahr. of the circulating brine. Thus, if we have brine circulating at a temperature of 36 degs. Fahr., we will get a milk cooled down to 45 degs. Fahr. At such a degree milk is entirely inert, that is to say, if there are any species of germs present they will not develop, and if the milk can be maintained at or about that temperature there can be no doubt that it will

be in a pure condition, and practically germ free. Briefly speaking, that is the description of the pasteurising process.

The principal plant, as we see, in connection with the production of germ-free milk, consists of steam and motive power, a pasteuriser, water supply for cooling the primary cooler, and a refrigerating machine for cooling the secondary cooler.

There are other phases of modern dairying in which the same principle of the application of heat becomes the prime factor, as it is in the handling of fresh milk. In butter-making, it is necessary to utilise not only heat in the destruction of free and dangerous bacteria, but it is necessary also to eliminate and isolate such bacteria as go to assist in healthy fermentation. It has been shown that the best butter is obtainable from cream which has been pasteurised to a high temperature, and in which some of the germs have been destroyed.

#### IN THE BUTTER FACTORY.

In a butter factory, the appliances are sometimes more elaborate than in an ordinary town dairy, but the principal rule is the same. Thus the milk is received and passed through a strainer, and is all mixed together in a general containing tank, after which it is pasteurised, and is then partially cooled to a degree at which effective separation of the milk and cream take place. The whole milk is then allowed to flow into a centrifugal separator, and is divided up into its main constituent parts, of cream and separated milk. The cream is again, in the most modern places, pasteurised, and is cooled down to a temperature of between 50 degs. and 60 degs. Fahr. At that temperature a pure culture of lactic bacteria is added and the fermentation of the cream takes place, so that in a matter of about one day's duration the cream is sufficiently fermented to be at once churned, and made into butter. The fermenting process, it is curious to relate, is accompanied by an increase in temperature of the cream of about 10 degs., and it has been proved that the best aggregation of the fat globules takes place when the cream has been reduced to something over 50 degs. Fahr, before it is placed in the churn. The churning causes the fat globules to go together, and butter is the result.

We do not describe in detail the process of butter-making here; it would take too long to do that, but enough has been said to show that in a butter factory the principal factors are, heat and cold. The heat is derived from the ordinary steam supply of a factory, and is used to destroy germs, and the cold may be derived from a refrigerating machine, and is used to reduce the temperature of the cream in a mechanical way so as to arrive at the best granular appearance of the butter which is the main article of produce.

There are a large number of accessory appliances in a modern creamery, and instead of these being reduced in number many improve-

ments have been introduced of late years, which have their merits, and some of them, perhaps, demerits. In any case the number of appliances which are considered necessary to a modern creamery is considerable, as may be inferred from the fact that a creamery to deal with the milk from 500 cows per day, with a view to making butter therefrom, would cost for mechanical appliances alone somewhere about £1,000.

#### LEGAL CONTROL NEEDED.

Legal control is the only remedy for the dangers to which milk is subject, and we find that in many countries this stage has been arrived at long ago. Take, for example, Denmark, in which it is compulsory to pasteurise milk; then again we have Holland where a splendid system of control is in operation, not only in connection with the milk supply, but in connection with the butter produce. There can indeed be nothing finer in the way of control stations than these admirable institutions which exist at various towns throughout the Netherlands, and which exercise the functions of control stations so as to ensure that butter produced in the dairies of Holland will reach a certain standard, and be free from adulteration. Such institutions exist at eight different centres in that small country, and are equipped in a manner which reflects the greatest possible credit upon the Dutch Government. Unfortunately there is so far no compulsory reference to these institutions, but they have so well warranted their establishment that there seems every likelihood that they will be soon placed in a position to control the total dairying and butter industry of the country.

As we have already shown, the whole industry is in course of being revolutionised, and what is likely to occur when the threatened legislation is brought into force it is difficult to see. It is likely that there will be a considerable elimination of existing members of the trade, not only in London but elsewhere, and the small distributor will be put out of the business. That may seem a disadvantage and a cruel proceeding, but it is impossible to conceive of any general laws which can be inaugurated without hurting someone. Let us hope, however, that whatever may be the effect of the contemplated laws, there will be general co-operation amongst the members of the dairy industry throughout the country to, as far as possible, bring their business into line with modern scientific thought.

---

Last year Natal imported from oversea manures and fertilisers to the value of £39,110. In 1906 the imports amounted in value to £22,963.



---

## The Sunflower.

---

### A USEFUL PLANT.

---

IN 1906 we produced, in Natal, 1,136 muids of sunflower seeds, from a total area of 191 acres. Of these 1,136 muids 212 were produced in the Lower Umzimkulu Division, 233 in the Division of Alexandra, and 160 in the Upper Umkomanzi Division, the balance being scattered generally over most of the remaining Magisterial Divisions of the Colony. The sunflower grows fairly well in most parts of the Colony, the conditions essential for its successful cultivation being, generally speaking, very similar to those required by maize. It is, however, not regarded as a staple or major crop; it is, nevertheless, found a useful accessory in mixed farming.

Very little has so far been done, so far as our observations go, in the cultivation of the sunflower in Natal on a commercial scale. Here, in our very midst, a market exists for large quantities of the seed for the expression of its oil for soap-making and other purposes, so that the systematic cultivation of the plant could be made a considerable source of revenue.

---

### BOTANY AND HABITAT.

---

The sunflower (*Helianthus annuus*) is said to be a native of Mexico and Peru, and was introduced into Europe at the end of the sixteenth century. It is largely cultivated in Russia, Germany, Italy, and France, and also in China and Tartary, as well as in the United States. It is an annual herb, bearing large, flat, circular flower heads. The seed is the most useful portion of the plant, and this is commonly eaten raw or cooked or used for the extraction of oil. The oil-cake after expression forms a valuable cattle-food and a condition powder for horses. The leaves and the stalk have distinct food values, and when reduced to a sufficient state of fineness possess nutritive qualities of a high order. The sunflower stem has rather strong bast fibres, and the plant has often been suggested as a source of cellulose for paper mills. The amount of cellulose is generally comparatively high. The fibre is too weak and brittle, however, to be of value for cordage or textile purposes, and perhaps its highest value lies in its use for fuel, the ash being rich in potash.

---

### CULTIVATION.

---

The method of cultivating sunflowers for commercial purposes is best

described by Dr. H. W. Wiley from the results of their growth in the United States: "As a rule the soils which are best suited for the growth of Indian corn (mealies) produce the best crop of sunflowers. If the soil is not naturally fertile, liberal fertilisation must be practised in order to secure large crops. The character of the fertilisation depends upon the nature of the soil and the deficiencies of the plant food therein. The kind of fertilisation necessary to produce a good crop of maize will be found suitable for the sunflower. The soil should be prepared by careful ploughing, and the surface of the ploughed soil should be reduced to good tilth by the use of the harrow. Sunflowers are best planted by a drill in rows from 3 to 3½ feet apart. In order to secure a good stand the seeds may be placed by the drill 2 or 3 inches apart; but should they all grow, at least half of them should be cut out when the plants are thinned. The seeds should be planted deep enough to secure abundant moisture to germinate them; from 2 to 3 inches in depth when the soil is not too heavy will be found the best. With heavy, stiff soils, which are likely to become very hard on the surface after heavy rains, it is better not to plant the seeds so deep. The seeds should be planted as early as possible in the spring, as they endure very well a slight degree of cold. After the plants are well formed they should be thinned so as to stand at a distance of from 12 to 18 inches in the row. The cultivation should be of the ordinary kind, mostly superficial, and sufficient to prevent the weeds from growing and preserve the moisture during periods of drought. When the production of seed is sought, the best results are secured by limiting the number of seed heads on each plant to a very few. The superfluous heads when formed should be removed. No special directions need be given for the cultivation, since it is so much like maize as to be practically the same."

As this crop is sensitive to frost, it should not be sown until all danger of this sort is past. Dr. Eric A. Nobbs says (*Cape Agricultural Journal*, Jan., 1908) that in Cape Colony seed sown about September or October has given the best results. He adds that the most suitable climate is one which is warm and sunny, and not subject to unseasonable frost. The sunflower takes from 3 to 4 months to mature, according to the variety of climate and soil.

Whilst the sunflower is susceptible to frost, it is singularly free from other diseases. Damage is sometimes reported by small birds and by surface caterpillars. The plant withstands drought well.

---

### THE SEEDS.

---

There are three principal varieties now cultivated in Russia, known by the shape and size of the fruits (*Achenes*), conventionally called seeds:

one with large white seeds which are said to yield the largest amount of oil; one with small black seeds which are sweeter and regarded as best for eating; and an intermediate form with striped seeds, used both for eating and the production of oil.

The yield varies according to the variety and the method of planting and cultivation. In America the yield is from 30 to 50 bushels—900 lbs. to 1,500 lbs.—to the acre. In the Cape Colony a yield of 3,250 lbs. to the acre has been obtained. In Natal in 1906 the average yield for the whole Colony was 5 muids per acre. The average yields of the more important Magisterial Divisions of the Colony were as follows—Lower Umzimkulu, 6·5; Alexandra, 4·8; Inanda, 7·0; Ixopo, 4·6; Umgeni, 3·0; New Hanover, 4·0; Upper Tugela, 8·0; Estcourt, 3·7; Weenen, 4·3; Klip River, 4·8; Dundee, 3·6; Utrecht, 4·0; Paulpietersburg, 7·5; Eshowe, 6·0.

The heads should be harvested before the seeds are quite ripe, to avoid shattering and loss. The sunflowers may be cut with a sickle or bill-hook, such as is used for cutting up prickly pears or aloes. After drying, the seeds can be thrashed out or beaten with a flail, or, where large quantities have to be treated, they may be easily removed from the heads by pressing the latter against a revolving wooden cylinder into which nails have been partly driven, the projecting heads serving the purpose of teeth on the cylinder of an ordinary threshing machine (Nobbs). The seeds should be stored in bags in a dry place to prevent mould.

#### USES OF THE SEEDS.

The seeds are the most valuable part of the plant on account of their edible kernels and of the superior quality of the oil prepared from them. In Russia the seeds are used largely for local consumption, where they are parched and eaten in the same way as "monkey-nuts" or earth-nuts in other parts of the world. Birds of all kinds thrive upon them, and they are specially employed in feeding caged birds and in fattening fowls for the table, and the diet is said to increase their laying powers. In America the seeds are at present employed in feeding poultry and to some extent mixed with other fodder as a cattle food. In Natal there is a demand for the seeds for use in the local soap and oil factories.

The oil-cake left after the expression of the oil forms a valuable cattle food, being, it is said, superior in this respect to maize or linseed cake, while it is also said to act as a natural "Condition powder" for horses owing to its easy digestibility and its great nutritive property. Sheep, pigs, rabbits and pigeons also fatten rapidly on the oil-cake.

#### CHEMICAL COMPOSITION.

Dr. J. Koenig\* gives the average composition of five samples of whole

\* Quoted by Mr. David Hooper, F.C.S., F.L.S., in the *Agricultural Ledger* (India).

seeds and of four of kernels. An analysis of the shells or hulls is added for comparison:—

## CHEMICAL COMPOSITION.

|                         | Seeds.             | Kernels.           | Shells.            |
|-------------------------|--------------------|--------------------|--------------------|
| Oil . . . . .           | 31.32              | 44.31              | 5.17               |
| Albuminoids . . . . .   | 13.67              | 26.28              | 5.16               |
| Carbohydrates . . . . . | 18.03              | 16.44              | 23.92              |
| Fibre . . . . .         | 25.35              | 2.81               | 54.95              |
| Ash . . . . .           | 3.05               | 3.46               | 1.78               |
| Water . . . . .         | 8.58               | 6.70               | 9.02               |
|                         | <hr/> 100.00 <hr/> | <hr/> 100.00 <hr/> | <hr/> 100.00 <hr/> |

Dr. H. W. Wiley gives, in Bulletin No 60, Division of Chemistry, U.S. Department of Agriculture, the following composition of sunflower seeds grown in the United States:—

|                         | Per cent.          |
|-------------------------|--------------------|
| Oil . . . . .           | 27.08              |
| Albuminoids . . . . .   | 14.97              |
| Carbohydrates . . . . . | 20.94              |
| Fibre . . . . .         | 29.17              |
| Ash . . . . .           | 3.41               |
| Water . . . . .         | 4.43               |
|                         | <hr/> 100.00 <hr/> |

According to Mr. D. Hooper, in the *Indian Agricultural Ledger*, European sunflower seed from which the hulls have been removed contains:—

|                               | German.            | Russian.           |
|-------------------------------|--------------------|--------------------|
| Oil . . . . .                 | 33.48              | 34.25              |
| Organic Substances . . . . .  | 54.04              | 54.39              |
| (including Protein . . . . .) | 14.12              | 18.80)             |
| Ash . . . . .                 | 2.86               | 3.56               |
| Water . . . . .               | 9.62               | 7.80               |
|                               | <hr/> 100.00 <hr/> | <hr/> 100.00 <hr/> |

The cake left after expression of the oil has, according to the same authority, the following composition:—



|                         | Per cent.          |
|-------------------------|--------------------|
| Oil . . . . .           | 8.94               |
| Albuminoids . . . . .   | 21.68              |
| Carbohydrates . . . . . | 19.05              |
| Fibre . . . . .         | 33.00              |
| *Ash . . . . .          | 9.33               |
| Water . . . . .         | 8.00               |
|                         | <hr/> 100.00 <hr/> |

\* Containing sand, 1.37 per cent.

### THE OIL.

The oil obtained by expression from the seeds is the most important product of the sunflower, and is valuable for many purposes. In its pure state the oil is said, on account of its palatability and sweetness, to be excellent for table use, for frying fish, and for other culinary purposes; indeed, it is much used in Russia as an adulterant of and substitute for olive oil for all domestic purposes. It may also be used for woollen dressing, lighting, and varnish and soap making. For the last-mentioned purpose it is said to be superior to most oils. It has also been substituted recently for other fixed oils in the making of margarine.

### OTHER USES OF THE PLANT.

As already stated, the stalks of the plant yield a fibre, which is, however, too brittle to be of much value for textile purposes. The stalks are, however, said to be useful for both fuel and manurial purposes. Both the leaves and stalks make a valuable manure, either directly ploughed in or after being used as cattle litter.

Smith observes that the sunflower is an excellent plant for bees, large quantities of honey and wax being obtained from the flowers.

According to Balfour, the blossoms yield a brilliant, lasting and useful dye. Crookes states that the petals are peculiarly rich in the amorphous resinous substance, *Xanthin*, the base of the yellow pigment from which they derive their colour. The seeds yield "helianthic acid," which, when treated with hydrochloric acid in a current of hydrogen, is resolved into glucose and a violet dye.

## ***The Forests of America.***

### HOW THEY ARE CONSERVED.

---

“Many people do not know what National Forests are. Others may have heard much about them, but have no idea of their true purpose and use. A little misunderstanding may cause a great deal of dissatisfaction. The National Forests very closely concern all the people of the West and, indeed, of the whole country. They affect, directly or indirectly, many great business interests. It is the object of this publication to explain just what they mean, what they are for, and how to use them.”

WITH these words the United States Forest Service open a very interesting and instructive bulletin entitled “The Use of the National Forests.” We in South Africa have very few forests, but the importance of the proper conservation of such forests as we have got is recognised and the need for more extended afforestation is appreciated. In view of this it is interesting to read of what America is doing in this respect, where immense forests have to be dealt with upon which depend many important industries at the present time. The estimates of the forest area of the United States run from 500,000,000 acres to 700,000,000 acres, and it is said that the annual growth does not exceed 60 board feet per acre. This gives in one case a yearly increase of 30 billion feet and in the other case one of 42 billion feet. In other words, it appears that the annual growth of the forests of the United States does not exceed the amount of wood used for lumber alone. Considering all the drains upon the forests, the annual consumption of wood is probably three times the annual growth. And how long will the timber last? Neglecting growth in the calculation it is estimated that the supply will be exhausted in 14 years. Assuming an annual growth of 40 billion feet, the supply is estimated to last 23 years.

How important, then, the question of forest conservancy is to the people of the United States will be realised, and that the Americans themselves are fully alive to the seriousness of the situation is reflected in the many articles, comments, notes, etc., appearing in the periodical literature reaching us from the New World. What interests us more particularly, however, in the present article, is how and why the National Forests were made, what they mean to the people, what they are for, and how they are used. In the Bulletin before us all these points are covered and the whole subject is explained in a popular and interesting manner.

We learn that it was in 1891 that Congress authorised the President to establish forest reserves—or National Forests, as they are now called—and that in the same year President Harrison created the first one—the

Yellowstone. It is stated that Congress took this action because the forests of the great mountain ranges in the West were being destroyed very rapidly by fire and reckless cutting. It was realised that unless something were done to protect them, the timber resources of the country and the many industries dependent upon the forest would be badly crippled. So the law aimed to save the timber for the use of the people and to "hold the mountain forests as great sponges to give out steady flows of water for use in the fertile valleys below."

At the start there was much opposition to the Forests. Often this opposition was just; for, although Congress had set apart the lands and their resources, it had made no provision for their use or their protection. The timber was simply locked up and left to burn. This mistake was remedied in 1897, when a law was passed which made it possible to use all the resources and give them suitable protection.

At first a great many of the National Forests were made without knowing exactly where the boundary lines should run. That was unfortunate; because some agricultural lands which should have been excluded were taken in, and a good deal of timber land which should have been included was left out. This could have been avoided by making examinations on the ground, but there was no money for the work, and so the boundaries had to be drawn very roughly.

Since 1900, however, men and money have been available for field examinations, and rough and inaccurate work has been done away with entirely. The old and carelessly made National Forests have been surveyed and mapped, and the President has put back into the public domain those lands which should not have been included. Now, before new Forests or additions to the old ones are made, all the lands are examined on the ground.

The greatest care is used in this work. Every section of the land is examined, mapped, and described, and the boundaries are drawn to exclude, as far as possible, everything which does not properly belong to a National Forest. Two very detailed maps are made. One shows what is growing on the land, the other shows who owns or claims the land. Every bit of cultivated land is located and mapped, as well as the land which is suited to cultivation but which is not cultivated at present. Men trained under western conditions are employed in the work. They report very thoroughly upon all matters, such as the importance of the forest to regulate the water flow, its present and future value in supplying the local demand for timber, and how the creation of a National Forest would affect all the local industries of the region—especially, how it would affect the home builder.

#### THE FOREST AND THE SETTLER.

When a National Forest is created the home maker is not interfered with in the least. In the first place, before the Forest is created, agricul-

tural lands are carefully excluded from the boundaries. It often happens, however, that there are little patches of agricultural land so located within the boundaries that it is impossible to cut them out. Such lands are open to settlement. Congress has extended the homestead law, slightly modified, to the National Forests. The home seeker can travel all through a Forest, pick out the agricultural land he wants for a home, apply for it, have it gazetted, settle upon it, build his home, cultivate his fields, and spend the rest of his days there. The only thing he must be careful about is to obey the law and take the land for a home, and not for other purposes.

The National Forest, then, does not in the least shut out real settlement. It encourages it. The more settlers, the more men on hand to fight fires, the better protection the Forest will get, and the better and fuller will be the use of all its resources.

Prospecting and mining go on just as if there were no National Forest there. The prospector is absolutely free to travel about and explore just as much as he pleases and wherever he pleases, without asking anybody's permission. When he strikes minerals he can stake out, locate, record, and develop just as many claims as he thinks are worth while, precisely as he would on the public domain.

The timber and wood are not locked up—very far from it. The timber is there to be used, now and in the future. It is given away, for domestic use, to the man with a home and the prospector developing his claim. They get it for the asking, free of charge. When wanted for commercial purposes, timber is sold to the small man and to the big man—sold promptly and at a reasonable cost. The small man can buy a few thousand feet; the big man can buy many million feet, provided it is to the general good to let him purchase a large amount, but not otherwise.

Most of the timber land in the West is good range for live stock. This range has to be included in the National Forests, because it goes with the timber and cannot be separated from it. It is grazed by cattle, sheep, and horses just as it always has been. It is one of the resources and is there to be used. At present it is used by about 1,500,000 cattle and horses and 6,000,000 sheep. The Government protects it from being burned up or from being overcrowded and overgrazed, prevents disputes between the owners of stock, and sees that each owner gets the use of that range to which he has the best right. The small man with a home in or near a National Forest always gets the first chance.

#### DEVELOPING THE COUNTRY.

The land itself can be used for all purposes. The main thing is that the land, as well as what grows upon it, must be used for the purpose for which it is most valuable. On it may be built stores, hotels, residences, power plants, mills, and many other things. All these are advantages to



National Forests, because they help to get the fullest use out of the land and its resources. Railroads, wagon roads, trails, canals, flumes, reservoirs, and telephone and power lines may be constructed whenever and wherever they are needed, as long as they do no unnecessary damage to the Forest. Improvements of this kind help to open up the country, and that is what is wanted.

Taking it altogether, then, it will be seen that a National Forest is not like a wall built around the public domain which locks up its lands and resources and stops settlement and industry. What it really does is to take the public domain, with all its resources and most of its laws, and make sure that the best possible use is made of every bit of it. And more than this, it makes these vast mountain regions a great deal more valuable, and keeps them a great deal more valuable, simply by using them in a careful way, with a little thought about the future.

The permanent wealth of a country comes from the soil. To insure permanent wealth the soil must be kept productive, agricultural lands are managed so as to produce the most valuable crops, year after year, without a break. Forest lands also should be managed so as to produce the most valuable crops of timber and wood, year after year, without interruption. Without a plentiful, cheap, and continuous supply of wood, agriculture and all its dependent industries must suffer. And in regions of little rainfall, without a plentiful and steady flow for irrigation, agriculture is either impossible or unprofitable.

National Forests from their own soil produce always the greatest possible amounts and the most valuable kinds of timber, wood, and forage; and the Forests themselves make the soil of the surrounding country produce the largest and most useful agricultural crops by supplying it with a steady flow of water for irrigation and by furnishing its settlers with an abundance of timber, and wood, and forage, for home and local business use.

Hundreds of millions of feet of timber are sold from the National Forests each year. That is why the Forest is protected. The timber is for use. The cuttings do not damage the Forest, because the lumbering operations are so carefully done that the stand is left in first-class condition for a second crop, and after that a third crop and any number of future crops. Fire is kept out of the cut-over lands to give the young growth a fair chance.

By wise use the timber crop can be made perpetual, and its quality is improved by encouraging a new and better growth of the most useful kinds of trees.

The Bulletin remarks that wood is so very essential in everyday life that it seems unwise to let it be monopolised by individuals or corporations. Actual results show that when public timber lands pass out of the Government's hands they eventually, and often very quickly, fall into the

hands of big concerns, which rarely show the slightest tendency to handle them for the greatest good of the people in the long run.

On a National Forest the present and future local demand is always considered first. The Government tries to see that there shall always be enough timber and wood on hand for use by the home builder, the prospector, the miner, the small mill man, the stockman, and all kinds of local industries. If local needs promise to consume it all, nothing is allowed to be shipped out of the country. If it were in the hands of individual or corporate owners, it would very likely be shipped out, regardless of local needs. It would seek the best market. If it were sold locally, the users would have to pay whatever price the owner might demand, and this price might be very unfair. This is especially important to the mining industry. All mining operations require a great deal of timber. It must be accessible, of suitable quality, fairly cheap, and always on hand. When timber for mines has to be shipped in from a distance at great expense it often makes the operations so costly as to be unprofitable. If the local supply is burned up, the mines suffer. In mining districts one of the chief objects of National Forests is to protect the timber and keep it on hand ready for use in the mines at all times.

No one has yet proved, the Bulletin remarks, that forests increase the rainfall to any great extent. What they do, and this no one of experience disputes, is to nurse and conserve the rain and snow after they have fallen. Water runs down a barren, hard surface with a rush all at once. It runs down a spongy, soft surface much more slowly, little by little. A very large part of the rain and snow of the arid regions fall upon the great mountain ranges. If these were bare of soil and vegetation, the waters would rush down to the valleys below in floods. But the forest cover—the trees, brush, grass, weeds, and vegetable litter—acts like a big sponge. It soaks up the water, checks it from rushing down all at once, and brings about an even flow during the whole season. The forest cover is also very important in preventing erosion and the washing down of silt. If the slopes were bare and the soil unprotected, the waters would carry down with them great quantities of soil, gradually filling up the reservoirs and canals and causing immense damage to the great irrigation systems.

The Forest Officers are often appointed as State and Territorial game wardens, to protect the game under State and Territorial laws. As a consequence game is usually more abundant and better looked after within the National Forests than outside of them. Although the services of Forest Officers in this respect are wholly incidental to their other work, because they are acting for the State and Territories and not as Federal officials, much good has been accomplished, and the arrangement has met with general approval. The people want the game preserved. In many cases it means a good money return to the locality concerned.

## ***Natal Tea in London.***

### EXPERT OPINION AND ADVICE TO EXPORTERS.

THE Minister of Agriculture has received from the Agent-General for Natal in London a copy of a report on the London reception of Natal tea in 1907, submitted by Mr. G. P. Hunt, who is a prominent tea-dealer and an expert in matters relating to the tea trade. Mr. Hunt's report contains some valuable recommendations regarding the Natal tea trade, and will doubtless prove of considerable interest to local growers.

Mr. Hunt, who addresses his report to Sir William Arbuckle, says:—

“Acting on the suggestion so kindly given by yourself at the interview accorded me on 30th ult., and also on the invitation received in correspondence with the Right Hon. Mr. Moor whilst in England last year attending the Colonial Conference, it is with some degree of pleasure that I venture a report on the subject of the Natal tea that came under my notice through the medium of the South African Exhibition (1907, London).

“Purchasing of this tea about 30 chests of the parcel mark ‘Hulett’s Kearsney’ (which, so far as my recollection serves, was the identical estate that His Majesty had most graciously purchased a package from on his previous day’s visit), I subsequently obtained samples from each individual chest on the Exhibition board from the estates ‘Aroma, Nonoti, ‘Bazley’s, Barnesdale,’ ‘Hindson’s, Clifton.’

“Mr. Moor’s invitation in his letter (Hotel Cecil, London, April 8th), particularly requested for information to be communicated in due course to the Department of Agriculture in Natal, both as to trade results and as to general experience gained during the disposal of my purchase. He further invited any suggestions that might be useful in the development of the export trade of Natal tea in England. Before closing this explanation for presenting my report, I trust you will forgive me for stating that the experiences and suggestions as hereinafter written, being those of an actual retailer of tea to the London public, are therefore possibly of the more value in that they are those of one in actual touch with the consumers of the commodity under discussion.

### THE NATAL FLAVOUR AND THE LONDON PUBLIC.

“Natal tea, in common with all other tea, possesses a flavour entirely its own. In London it is customary to create a blend that, although possessing the main characteristic of a particular kind of tea, has yet in itself a secondary imported flavour through admixture or blending with

other growths. This being so, it is not surprising that the pure Natal tea, either in lead packets or bulk, is not exactly a success. Very few of my customers appreciate the tea pure, and, as an experiment, I packed a 'Natal Blend' composed of mainly Natal tea with a proportion of Indian and Ceylon that was appreciated by many.

"The analytical properties of Natal tea and its remarkable freedom from tannin are now so well known as to hardly come within the scope of a report of this description.

#### MANUFACTURE, APPEARANCE AND PACKING.

"In this respect there was absolutely no fault to be found in any of the estates or marks, the manufacture being much in advance of many teas that were realising similar prices on the London market. Many London tea men commented on the excellence of the manufacture and style.

"It is of the utmost importance that bulk tea be packed in chests the wood of which is inodorous. The wood of the chests containing Natal tea that came under my notice was not perfect in this respect. I do not say that the tea suffered greatly as the chests were lead lined. The Ceylon and Indian packages, however, are much superior in this respect, being made of inodorous wood.

#### POSSIBLE FUTURE OF LOW GRADE BULK TEA.

"Whilst every merchant is desirous of selling high grade goods, yet the factor of those of cheap and low grade can never be safely neglected. In this respect the future of Natal tea to one to whom the cost of production is unknown is naturally very hard to foresee. There would appear to be always a certain demand for cheap tea among the working class population in England, and this demand is at the present moment being filled in great measure by China tea. I do not know if Natal planters would be satisfied with the price that China tea brings, but assuming that they would, I am of opinion that the class of consumer just mentioned would prefer Natal tea, however low grade, to cheap China-grown tea. Therefore, a Natal planter, ere he consigns a surplus stock to the London market, had best ascertain through the official channels the ruling prices for cheap China leaf, and get some insight as to what he thereby may expect, and act accordingly.

"Whether the successful possibilities of tea will be increased or otherwise in the future would appear to be a question beyond the certain knowledge of any man in these days of contention in regard to reciprocal agreements, tariff reform, and such questions mooted for the good or otherwise of the Empire generally.

#### POSSIBLE FUTURE OF HIGH GRADE NATAL PACKET TEA.

"It is in this capacity that a successful opening in the immediate



future for Natal tea would seem to be, but the lines of development must be on modern methods. The tea should be packed and blended in England with tea from other countries, with the Natal flavour predominating, and should be labelled prominently 'Natal Blend.'

"Modern introducers of packet tea in England supply the shopkeepers with large quantities of dummy packets (paper, not lead), for show purposes, so that they may have the wherewithal to make an attractive window display, thereby saving the soiling of the actual stock.

"By the way, lead packets are being largely superseded by a paper packet lined with greaseproof paper, which is claimed to be nearly as effective as lead in keeping the tea good, and the cost is so much lower too.

"With a view to reducing the cost of packet tea (and it does reduce it about  $\frac{1}{2}$ d. per lb.), some of the largest firms pack their paper packet tea *gross weight*, and print legibly and openly on the packet "The weight of this packet including the wrapper is  $\frac{1}{2}$  lb." Other firms pack *nett weight* of tea in packet, and it is hard to say what the predominant public opinion of the matter is, as both methods command large sales. It is very apparent that the firm packing tea *gross weight* can afford to go  $\frac{1}{2}$ d. per lb. better in quality over its rival packing *nett weight*.

"In packing lead packets into chests for ocean transport, it is inadvisable to pack too many in one chest unless inter-compartment divisions are used to prevent jarring. The 'Hulett Kearsney' packets suffered somewhat in this respect; many of the packets had worked loose and were burst and were unfit for sale as packets.

#### HULETT'S KEARSNEY LEAD PACKETS.

"These attractive packets were labelled in very superior style and greatly admired, more especially the artistic colouring of the violet and gold ones. It would, however, have been better to have packed these (the pioneer Natal packet tea to England, I believe), in  $\frac{1}{2}$  lb. and  $\frac{1}{4}$  lb. packets. Customers did not care to risk the purchase of an entire pound of a new tea they might not like. London blenders putting a new tea on the London market usually pack a preponderance of  $\frac{1}{4}$  lb. packets, and some even descend to 1 oz. and 2 oz. sizes in order to induce the public to try a new tea without much financial risk.

"As a set-off against the adverse criticism that has been heard regarding Natal tea, Mr. Hunt concludes, let me remind the authors thereof that Java tea received the same adverse criticisms but a few years ago, and now these same critics are but too eager to avail themselves of these self-same Java teas for their blends. So let not Natal planters be discouraged, and let not him that hath put his hand to the plough turn back."

## Sheep Dips and Ointments.

### VARIOUS KINDS, OLD AND NEW.

THE Board of Agriculture of Great Britain recently conducted a series of experiments on the dipping of sheep with various preparations; it also held an enquiry, during the course of which a large number of witnesses were examined, and as a result of the report of the Committee, the Government have passed an Act by which dipping is made compulsory. In connection with this action of the Government Mr. O. Quibell last October read an interesting paper before the Nottingham Section of the Society of Chemical Industry on "Sheep Dips." At the outset he explained that dipping is resorted to for killing parasites and for preventing infestation, remarking that the most important parasites of sheep are the "scab acarus" (*Psoroptes communis*), the ked (*Melophagus ovinus*), the tick (*Ixodes redivus*), the maggot (*Lucilia*), and the red louse (*Trichodectes spheroccephalus*). The parasite which causes the greatest ravages and the most serious trouble is the "scab mite." It is important that the farmer should prevent his sheep being infested with this pest, as the value of his flock is very largely reduced thereby both from the wool and mutton point of view. With favourable conditions as to atmosphere and temperature, scab is readily conveyed through a flock and the pasture occupied by the infested animals becomes a source of danger for a long time. The disease is known as scab owing to the fact that the acari when they attack the sheep cause a considerable breakdown accompanied with the formation of an exudate, which dries into hard incrustation which is known as the scab.

The early attempts at eradicating scab usually took the form of anointing the affected portions of the body of the sheep with an ointment made of lard, mercury and its salts, or with the salts of copper and zinc, but by far the most popular preparation was "mercurial ointment," which was also known under the synonym of "troopers' ointment." This consisted of 16 parts of metallic mercury, 16 parts of lard, and one part of suet. This ointment successfully killed off the "acari" (in the affected parts), but a great drawback in connection with its use was the fact that where "acari" had emigrated to other parts and had not set up irritation, they were entirely missed; these ultimately set to work, and fresh scab spots would be found later on, but in addition to this the mercury was rapidly absorbed through the skin and all the symptoms of mercurial poisoning were soon set up after the inunction; thus the curing frequently caused very much more loss than the disease. Another preparation at one time popular was copper oleate, which was rubbed in, in much the same way

as the mercury compound just described, but it was subject to the same disadvantages as "troopers' ointment."

Proceeding to discuss the various dips which have been invented, Mr. Quibell remarked that arsenic was the main ingredient in some of the earliest dips. Some of these were very crude, consisting merely of arsenious acid boiled with water, to which was added an astringent such as alum, or iron or zinc sulphates. Little of the arsenious acid was, however, dissolved, it being contained in the bath principally as a sediment. An attempt was made to distribute it evenly in the bath so that each sheep should have its fair proportion of it. The concoction killed off parasites freely, but the acid frequently stripped the sheep of its wool, in spite of the added stringent. Losses too occurred owing to some of the mixture being drunk by the sheep. To prevent this, some aloes was dissolved in the bath with the object of colouring it and also making it bitter.

Hellebore in either of its varieties was found to be sometimes effective, but its cost was too high. Moreover, if the root was ground, the powder set up irritation of the mucous surfaces both of the sheep and of the persons handling it. Tobacco, too, was used in the early days, but the mixtures were very crude and sometimes failed to kill off the pest, while it stained the wool and lowered its market value. Sulphydrates of lime and potash also came early into use, but, though they killed off the scab mite, they had little or no effect upon the keds. Then, too, any free lime present made the wool fibre very brittle and uneven, while sulphydrate of potash had very marked depilatory properties.

Lime and Sulphur, Mr. Quibell continued, is an undoubted cure for scab, though it fails to kill off other parasites. The Australian Governments, when they framed their regulations for the eradication of scab, all advocated its use, and, though the value of Australian wool was very low while this dip was in use, the Governments were quite justified in their action, for it completely put an end to a trouble which has caused the loss of millions of pounds per annum to squatters. The New Zealand Government also did the same thing, and there the same success as far as scab was concerned was obtained. Since scab has been eradicated, and the low price of wool was definitely traced to the use of lime and sulphur, the flock-owners in Australia now almost invariably dip in either an arsenical or a carbolic preparation, either of which is effective in killing off all forms of life, in addition to stimulating the skin, thus increasing the wool value of the sheep and also the mutton value of the carcase. The Cape Government has not been so successful, but a large proportion of the sheep in the Cape are dipped in lime and sulphur, and it is interesting to note that the wools from this Colony fetch a far lower price than those produced in the countries which have given up its use. The arsenical and carbolic preparations are quite as efficient as lime and sulphur, has been amply demonstrated by the report of the Committee appointed by the Board of Agriculture.



Arsenical dips consist of the alkali salts of arsenious acid, sulphides of arsenic, and free sulphur, together with some free arsenious acid. The efficiency of this class of preparation as a parasiticide is admitted everywhere, and where the dip is well manufactured and properly blended its value as a wool stimulant is also recognised. In the modern dip the use of astringents is not called for, as the caustic action of the arsenious acid in the earlier preparations is now absent. In addition to killing off the parasites actually present on the animals dipped, the arsenic precipitated in the fleece, together with the sulphides of arsenic and sulphur, acts as a prophylactic against re-infestation. What actually happens to the sulphur and sulphides of arsenic in the fleece is not clear, but it is evident that both are acted on. A distinct odour is given off by the sheep after dipping, indicating that some chemical action is taking place. Whether the emanation keeps off the parasites is doubtful, but it is certain that any parasites that get on the sheep within a reasonable time after dipping are killed. In the report of the Departmental Committee of the Board of Agriculture, attention is drawn to the fact that the pupae of keds are not destroyed after dipping in arsenic. An arsenical dip kills scab mite in from 5 to 20 hours. Whether its eggs are killed is doubtful, but if the dip has been used in proper strength, fresh acari are not always found on the sheep, even though those eggs take from 12 to 15 days to hatch out. One of the difficulties that we have to contend with in the curing of scab is that the scab crust is not always penetrated by the dip, so frequently some of the eggs are protected by it; hence it is imperative for perfect safety to re-dip the sheep at the end of from 12 to 15 days, when the protected eggs will have hatched out. The Board of Agriculture, however, recommend that one dipping only is necessary for the curing of scab. The sheep which were experimented on by the Departmental Committee were inoculated with scab. Their condition was very high and the weather was very dry. It was found that the scab did not spread, so it was decided that the necessary moisture should be imparted to the fleece by watering the sheep with a watering-can. Even then the scab was not at all virulent, hence the test could not be considered typical, *i.e.*, where scab abounds in a flock it is usually of a more virulent type than that which obtained in the experiment, and more protection would be afforded by the scab crust to the acari which were present. "I have had some experience of scab in dry weather," Mr. Quibell remarked. "Some sheep which had some very small spots and in which acari were found, were watered in much the same way as those described in the report. The scab, instead of spreading, became gradually less, until ultimately the whole of the acari were killed off by the watering. The condition of the sheep was finally excellent, though when I first saw them they were in a low condition. The use of an arsenical dip is much appreciated in countries where scab abounds owing to its preventive



powers, and also where the tick is a cause of trouble, as the young ticks which have been hatched out in the pastures are killed off as soon as they try to adopt themselves to the host. The good effect of an arsenical dip upon the quality of the fleece of the animal is amply proved by the high prices which are obtained for the wool. Almost invariably the highest priced wools are those that have been dipped in arsenical and carbolic preparations." The following is the composition of a typical dip of the sulphur-arsenic type:—Arsenic trioxide, 21.90 per cent.; alkali, 2.86 per cent.; moisture, 6.70 per cent.; sulphur, 68.54 per cent.; 1 lb. of it is diluted with eleven gallons of water.

### CARBOLIC ACID DIPS.

Carbolic acid dips were also found by the Sheep Dipping Committee to be highly effective as parasiticides, but their lasting properties are very small, and in this respect they are inferior to the arsenical dips. Their action in killing the adult parasite is very rapid, death usually occurring in from 5 to 15 minutes. The pupae of the keds are not destroyed by it, neither are the eggs of sheep scab acari. The red louse is rapidly destroyed, as also are any ticks and maggots. The lack of preventive power of carbolic dips is shown by the fact that sheep dipped in them have frequently been fly-struck within 3 or 4 days after dipping, and the maggots developed in quite a normal manner.

There are three main types of the carbolic dip on the market; the first type is that which forms a rich emulsion when added to water. In addition to carbolic acid it contains a large amount of hydrocarbon oils and soaps. The second is a semi-solution or emulsion containing a smaller amount of hydrocarbon oils, while the third variety is a true solution, the carbolic or cresylic acid being made soluble by the addition of a fairly large amount of soap. The first type has been widely condemned, as it contains a comparatively small amount of carbolic acid with a relatively large amount of neutral hydrocarbon oils. The latter are said to have little power as parasiticides, but the Board of Agriculture do not agree with this contention, as they approve of a dip of this kind which contains far less carbolic acid than they insist upon in the case of the semi-emulsion or true solution. The amount of tar acid contained in the bath for the effective killing of parasites is far less with a true emulsion than is the case with other types, but the emulsion is considered to kill far more quickly and effectively. If a parasite is placed under the microscope with an emulsion it will be seen that the suspended globules attach themselves to the organism, killing it very rapidly by completely surrounding it with an envelope of the insoluble material (of course containing carbolic acid as well as the neutral hydrocarbon oils). The action of solutions of carbolic acid must naturally be very different from this, as the poison must first dialyse through the outer walls of the insect

before coming into contact with the vital parts, hence its action would be somewhat slower than is the case with the emulsion. In addition to this, if sheep are not given a sufficiently long time in the bath, such dialysis, which is apparently necessary to the death of the parasite, would not take place. Early removal of the sheep from the bath containing an emulsion would not apparently be a serious matter, as the deposition of the active constituents would have efficiently taken place and killed the pest after the sheep had been removed from the dip. Emulsifying preparations have a decided stimulating influence upon the skin of the animal, causing a much finer fleece to be produced both as to quality and quantity. The wool grown after dipping can be readily traced on examining the sheep, and it is remarkable to note how the dips stimulate the growth.

The preventive properties of carbolic dips are very low, and where parasites have to be dealt with a second dipping should take place some 14 to 18 days after the first immersion, as by then the whole of the keds contained in the pupae present at the first dipping will have hatched out, as also will the acari from any eggs deposited by the scab mite which was killed at the first dipping.

During recent years a tendency has been shown by many stock-owners to use a combination of both carbolic and arsenical dips. At first this was done by mixing an arsenical powder dip and a liquid carbolic dip. It was the practice to use one of the dips in full strength and the other at half strength, but more recently manufacturers have produced a preparation which is sold in the form of a paste. This contains a carbolic acid together with hydrocarbon oils and some greases which are said to waterproof the fleece; into this paste is incorporated arsenic in a more or less soluble form. These dips are found extremely effective. The carbolic acid portion kills off the parasites very rapidly while the arsenic which remains in the fleece kills off the eggs and pupae which would hatch out at a later date. Their effect upon the wool is usually a good one and the popularity of this kind of dip is a rapidly growing one.

In connection with the tar preparations it is well to mention that care must be exercised in the selection of the tar oil present. The distillates known as "middle oils" should be used and the higher boiling oils avoided as they discolour the wool and adversely affect the fibre, rendering the whole fleece of little value to the manufacturer as they cannot be scoured successfully. "I have little personal experience with tobacco-dips, but I have seen wools badly discoloured by some solutions. As the colour was not readily washed out, considerable depreciation in value took place. They kill scab and other insects with facility, but, like carbolic dips, they do not kill off the pupae of the keds, though they appear to be effective in destroying the eggs of the acarus."

## **Natal's Industries.**

### REPORT OF THE CUSTOMS TARIFF INQUIRY COMMISSION.

#### INTERESTING FACTS AND RECOMMENDATIONS.

PUBLISHED as a supplement to the *Natal Government Gazette* of the 31st March, the report of the Customs Tariff Inquiry Commission contains a large amount of interesting information relative to our industries in general and what may be termed our agricultural industries in particular. The industries on the subject of which evidence was given by witnesses before the Commission were:—Manufacture of bricks; building; candles; cement; chemical works (including manures, disinfectants, dips, cattle food, chemical compounds, tinctures, Dutch medicines, etc.); cigarettes; confectionery (including cakes, biscuits and sweetmeats); creameries; distilling; foods (patent); fruit syrups; iron and brass engineering; leather; matches; milling (including products of wheat and mealies); paper making; printing and bookbinding; preserving (condiments, curry powders, saucers, jams, chutnies, pickles); planting (including sugar, tea, tobacco, etc.); soap making (including oil-pressing and glycerine); tailoring and apparel; tent, sail, sack and tarpaulin manufacturing; wagon and carriage building; zinc and tinware manufacturing.

Passing by the sections of the Report discussing the principles of protection and dealing with such matters as preferential railway rates, bonuses and bounties, British preference, the present (1906) Customs tariff, etc.—to which we may return in a future issue of the *Journal*—we come to Part III., containing a precis of the evidence obtained together with the recommendations of the Commissioners; and it is this portion of the Report which is of particular interest to farmers. Before proceeding, however, to discuss the various industries *separatim*, reference must be made to the question of “dumping,” especially as it has an important bearing upon some of the chief agricultural industries of the Colony, particularly tea and sugar planting. What is known as “dumping” is a serious economic evil, especially (in Natal) in the case of sugar grown in Java, imported into Australia, then refined in bond, and then dumped into South Africa. Not only, however, are South African producers faced with this class of unfair competition, or market piracy, but merchants are liable at any moment to find their market flooded, with goods sent out by speculators and sold chiefly by auction at prices bearing no relation to actual cost, which goods are similar to those they have in stock, for which they have paid legitimate prices, and the sale of which is seriously interfered with in consequence. The latter class of dumping, it is under-



stood, has diminished in volume since the depression set in, but were times to improve and were the South African market to offer renewed attractions to those given to this more or less reprehensible class of business, there can be little doubt that what has happened in good times before would be repeated. The Commission call attention to the necessity for some means of preventing dumping, which, in the cases of tea, sugar, and a few other commodities may best be secured by the imposition of an increased duty at the Port, and in other cases by the provision of a special "dumping clause" constructed upon lines similar to those of the dumping clause of the Canadian tariff.

In formulating their recommendations the Commissioners have, where possible, given effect to the principle followed in countries where protection has been adopted as a policy—that of admitting raw materials free of duty, where there are no valid reasons against such a course, and where such valid reasons exist, the duty on raw materials has been kept down to as low a rate as has been deemed wise under all the circumstances. This principle is adopted to the end that the duty required to protect the completed article may be kept down to the lowest rate likely to prove adequate for the purpose of protection.

The recommendations of the Commission will be found at the end of each section dealing with the various industries separately.

---

### ***Agricultural Industries.***

---

#### **TEA.**

---

To judge by comments of correspondents in the public press, the actual facts concerning the tea industry in Natal are apparently unknown to the public, and there has been widespread misapprehension of the truth, leading to wholly erroneous criticism and misstatements. The Commissioners deem it well, therefore, in the interests of truth, fair-play, and well-advised future action, that the facts should be made known, as received in evidence.

In the early days of experimental tea planting in Natal, the revenue duty upon tea in Natal was 7d. per lb. Not before 1885, however, did Natal tea appear on the market in any appreciable quantity, in which year the revenue on tea was 6d. per lb., and the idea of this 6d. rate being a permanent one, for revenue purposes was a sufficient inducement for the investment of capital in the industry. It will be remembered that for many years 6d. was the rate of duty on tea in the United Kingdom, where it was regarded as a duty for revenue purposes only. In 1883 the price for imported tea paid by the consumer in Natal ranged from 2s. to 3s. 6d. per lb., inclusive of the duty. About that period, very considerable developments took place in the tea industry, several new planta-



tions were opened up, and the area of land under tea very considerably increased, and from that time the extent of the industry has gradually increased year by year. In 1904 the price of tea had fallen on the World's markets, but in Natal it had fallen to from 1s. to 1s. 6d. per lb., from the 2s. to 3s. 6d. of 1883, and it is contended that this local drop in prices exceeded the fall in outside markets. Natal tea is now sold to the consumer at from 9d. to 1s. 3d. per lb., according to quality. The Commissioners fail to see any indication, from these figures, that the consumer in South Africa is suffering in his pocket from the existence of tea growing as an industry in Natal.

In 1904 the duty in South Africa on imported tea was reduced to 4d. per lb., and later, in 1906, a duty of 15 per cent. was imposed on wood imported for packing purposes, and of 25 per cent. on all printed matter for labels, etc., used in the business. When it is borne in mind that the packing cases and labels used in the case of imported tea are allowed to enter the country free of duty, it will be seen that imported tea is favoured in this respect as compared with tea of local production. When it is further borne in mind that in the tea growing country from which Natal tea meets the severest competition, the currency is a silver one, and that the planter in that country, in consequence, enjoys an advantage of some 33 per cent. in the cost of his labour, it will further be appreciated that 4d. per lb. so-called "protection," which the Natal planter is popularly supposed to enjoy, is severely discounted.

But can that 4d. per lb. duty be fairly termed a protective duty?

In almost every country in the world where tea is consumed, this commodity has been deemed a very suitable one from which to obtain revenue by means of a Customs duty. Of the 38 British Colonies and Foreign Countries, whose Customs tariffs are enumerated in Kelly's Customs tariffs of the World (1905 Edition), the duty ranges from 2s. 10d. per lb. to 10 per cent. *ad valorem*. As none of these countries produce tea, except one, it is manifest that in all the other cases tea must have been selected on the ground that it is a fit and proper commodity from which to obtain revenue. Further, with the exception of four of these countries, referred to above, the present duty on tea in the South African Union stands at the lowest figure.

In 1906, the importations of teas from over-sea into the States of the South African Union amounted, in weight, to 4,822,000 lbs., of a money value of £221,000. Figures have been produced to show that the whole of this tea and more could be produced by the tea estates at present in existence in Natal.

The money expended and distributed in a multitude of ways, by the Natal tea industry in South Africa, amounts to between £50,000 and £60,000 per annum at present. Disaster to the industry would not only mean the loss of this expenditure, but that there would cease to be the com-

petition between the local producer and the importer, and the latter would be in a position to raise prices against the consumer. Dumping, it is alleged, now seriously threatens the tea industry of Natal. South Africa, it is stated in evidence, has been made the dumping ground for certain classes of Indian and Ceylon teas—elsewhere unsaleable. These teas, it is asserted, must have been sold at prices much below cost of production, thus causing such severe competition in the local market as to have rendered the carrying on of the tea industry in Natal unprofitable for some time past.

The figures, as supplied by one of the largest groups of tea estates, show the division of wages to be for twelve months as follows:—

|                                               |         |
|-----------------------------------------------|---------|
| Whites (including those in Durban Office) ..  | £3,833  |
| Coloured (including rations to coolies) .. .. | £3,672* |

Owing to the possibility of preferential railway rates being abolished at the coming Pretoria Conference, it is necessary to bear in mind that Natal tea, taking Johannesburg as a central point, is privileged as compared with imported tea, to the extent of £3 3s. 4d. per ton. To remove that privilege, without giving compensation therefor, in the shape of additional duty at the Port, would be a very serious additional blow to an industry already suffering from the effects of the action of past Conferences, to a degree that has deprived the shareholders of any dividend for some years. The equivalent additional duty to compensate for the loss of the privilege on the railway, taking Johannesburg as the central point, would be about 2-5ths of a penny per lb.

#### RECOMMENDATIONS.

In view of the fact that even in free-trade Great Britain, the duty on tea at present is 5d. per lb., or 25 per cent. higher than the present South African Union duty, and that, within recent years it has been as high as 7d. per lb. in Great Britain, for revenueal purposes, the Commissioners, taking also all the conditions into account, do not think that the following suggested recommendations err on the side of unduly favouring the tea planter:—

- (a) That, in the event of preferential railway rates being abolished, the duty on tea imported in packets be restored to 6d. per lb.
- (b) That, in the event of preferential railway rates being abolished, the duty on tea imported in bulk be 5½d. per lb.

---

\* Since the above was written the following figures have been supplied, as representing as nearly as could be obtained from an estate to estate enquiry, the division of wages paid during 1907, over the whole tea industry in Natal:—To Europeans, £6,500; to Coloureds, £13,700. (*Footnote by Commission.*)

- (c) That, in the event of preferential railway rates, and the duty on box shooks, printing, and rice, being retained as at present, the duty on all imported tea to be 5d. per lb.

## SUGAR.

### I.—FROM THE POINT OF VIEW OF THE PLANTERS.

As of the tea, so of the sugar industry, it may be said that the public have been misled hitherto by the lack of that knowledge of facts which is essential to correct judgment. Hence it is also necessary in the case of the sugar industry to disperse misconceptions by an array of facts culled from the evidence.

The duty on sugar prior to the last Conference was:—

- (a) Not refined, golden syrup, molasses, saccharum  
and treacle per 100 lb. . . . . 0 3 6  
Equals £3 10s. 0d. per ton.
- (b) Refined, per 100 lb. . . . . 0 5 0  
Equals £5 0s. 0d. per ton.

This was altered at the last (1906) Conference to the following:—

- (a) Candy, loaf, castor, icing, and cube, per 100 lb. 0 5 0  
Equals £5 0s. 0d. per ton.
- (b) Other kinds, including golden and maple syrup,  
molasses, saccharum and treacle, per 100 lb. . . . . 0 3 6  
Equals £3 10s. 0d. per ton.
- (c) Saccharine and other sweetening substances in a  
concentrated form, per lb. . . . . 1 0 0

“Note.—In the case of sugar, upon which bounties are granted in the country of origin, an additional duty equal to the amount of such bounty is to be levied.”

The effect of that change was disastrous to the Natal industry, in as much as it let into South Africa refined sugar at £3 10s. per ton as against the former £5, and thus led to the dumping which will be referred to later on.

To correct much misrepresentation, based on ignorance of the facts, it is well to point out here, that the duty on sugar has not been raised since the first duty was put on sugar for revenueal purposes in the '50's, *i.e.*, before any cane was planted in Natal. Hence it cannot truthfully be alleged that the sugar industry in Natal has ever been in receipt of protection *qua* protection. Further, it should be clearly understood that the distinction between “refined” and “unrefined” sugar is as follows:—Refined sugars have all been treated at refineries by passing them through animal charcoal filters, which sterilises them, and thus increases their keeping powers, and enables them to be used for the making of preserves,

syrups, etc. Unrefined sugars are plantation sugars, which have not been refined (as above at refineries), and which, though they may possess the same relative degree of purity while fresh, are more likely to sweat, and soon develop organic life, which renders them less wholesome than refined, and wholly unsuited for the making of preserves, syrups, etc.

Interested parties abroad prior to the last Conference represented that as plantation (unrefined) sugars were nowadays made of the same relative purity as refined sugars, it was unfair to penalise refined sugars by imposing a higher duty on refined than on unrefined sugars, and stated that it was impossible to tell the one from the other, the purity being relatively equal. This was specious, in as much as no allowance was made in that statement for the great difference in the wholesomeness, keeping qualities and utility of the two classes nor for the fact that when unrefined sugars have been kept long enough (about six weeks) a simple test exists by which the very marked presence of organisms betrays at once the unrefined, unsterilised sugar. Those representations, however, sufficed to obtain the reduction in duty on refined sugars, at the last Customs Conference, which reduction has proved so disastrous to the Natal industry.

From this point the case can best be set forth by quoting extracts from the evidence given by various witnesses representing the whole sugar industry.

"The capital invested in the sugar industry of Natal amounts to over £1,500,000, out of which barely £200,000 is presently held outside the Colony."

"Quite £200,000 has been spent in machinery alone within the past 18 months."

"The yearly output can safely be estimated at 40,000 tons (some put it at 50,000) which, at the low price of £13 per ton (average price for all sugars) means £520,000 (or £650,000) of products dealt with by the trade of the Colony."

"Without referring to the various contributions of this industry, to the Treasury in the shape of Customs duties paid on food-stuff, ironmongery and other requirements, the following points must be taken into consideration:—

- "(1) All the alcohol manufactured here is a bye product of sugar, on which an excise duty of about £46,000\* is paid yearly to the Government. Methylated spirit is also manufactured here on a large scale, and supplied to all the South African markets. During the past year a market has been secured in London which will take the whole of our surplus stock,

---

\* In 1907, the excise duty on alcohol received by the Government of Natal amounted to £38,769 6s. 6d. being a great decrease on the previous year. (*Footnote by Commission.*)



and which will give employment to white labour, such as coopers, etc., also freight to steamers visiting this Port.

- (2) The wages paid on the estates may safely be computed as 4-7ths to Indians and Kafirs, and 3-7ths to white skilled labour.

The following particulars as to the distribution of wages annually upon three of the largest sugar estates in Natal have been supplied:—

|                          | Whites, | Coloureds, |
|--------------------------|---------|------------|
| Estate A. . . . .        | 7,000   | 14,000     |
| Estate B. . . . .        | 9,125   | 14,291     |
| Estate C. . . . .        | 6,600   | 9,000      |
| Total on 3 estates . . . | £22,725 | £37,291    |

- (3) An average of £6 per ton of sugar may be reckoned as the cost of purchasing necessities required by the industry. This represents a buying power of £240,000 spent yearly amongst the local breeders of stock, the producers of grains like mealies, and beans, and sundry local manufactures, such as bricks, salt, oils, etc. It also circulates among the white labour employed in the engineering, building and other trades, and amongst the importers of food-stuffs and other goods.

“Owing to the reduction of the duty, South Africa has become the ‘dumping ground’ for Australian refined (Java) sugar.

“This refined sugar is the product of a foreign grown article; the raw sugar being imported from Java duty free (in bond) with the further advantage of being freed from Excise duty when exported as refined.

“The importation of this Java sugar (grown by natives) enables the Australian refineries to be worked at their full capacity, thus reducing the cost of production of Australian (refined) sugars generally.

“As the importation of this Java sugar brings about a considerable surplus over the Australian home consumption, it becomes necessary, after making the very beneficial use of it as stated, and with the view of keeping up the price of the home market, to export an equivalent quantity (to the surplus) of refined sugar, and South Africa, with its prevailing low duty, becomes the dumping ground for it, to the very serious detriment of our own industry.

“To show the urgent necessity for disposing of this surplus sugar it is only necessary to mention that it is being sold on arrival at our Port at a minimum loss of £2 per ton to the Australian shippers, this information being gathered from a most reliable source, a balance sheet giving cost of production of one of the largest central factories in Australia.

"The sugar industry of Australia, in addition to these material advantages, is protected by an import duty of £6 per ton, whilst our Natal duty is (one of) the lowest in existence."

"Before dealing with our present tariff, it is necessary to point out that . . . (a sugar industry in a country) from the point of view of the consumers, creates a local market . . . instead of depending entirely upon the imported article, which is subject to sudden fluctuations, and which commands famine prices in case of scarcity."

"It is to be noted that the sugar market reaches its highest level in South Africa from February to June, when the crop of Natal has been disposed of and is no longer in competition with imported sugars."

"All over Continental Europe, wherever the bounties have been abolished, there is a large wall of protection made of Customs duties, preferential railway tariffs and private cartels which forbid the entry of foreign sugars."

"England, which is a free trade country, has a Customs duty of £4 3s. 4d. per ton on all the refined sugar, or the white unrefined sugars polarising 98 degrees and over, with a lesser duty on the inferior grades graduated according to their polariscope test."

"It is needless to point out that the existing South African duty of £3 10s. per ton on all sugars refined or unrefined is (almost) the lowest duty in the whole world. The last Customs Conference, in adopting that tariff, has done an immense injury to the Natal industry."

"It has opened the door to foreign sugar made in Java by Javanese labour, refined in bond in Australia and dumped in the South African markets at 11s. 9d. per 100 lb. c.i.f. (£11 15s. per ton), whilst the same sugar is sold in the Australian markets at 19s. 6d. per 100 lb. (or £19 10s. per ton)."

"If this duty is maintained, it means the extinction of the Natal industry, to the detriment of the producers and the Colony generally, and without any advantage to the consumers either in Natal or in the interior States, as they will be only dependent upon the imported article, which will then command a much higher price."

In asking for a revision of the South African Union Tariff, the sugar planters state that they "are not taking the view of extreme protectionists," but think that they are entitled to:—

*Fair play.*—That the South African Tariff should not encourage dumping as at present, but should close the door thereto absolutely.—That the principle of placing a higher duty on refined than on unrefined sugar, which is still adopted in such countries as the United States, Canada, Newfoundland, India, and was adopted in South Africa until the last Customs Conference, be again adopted in the South African Union Tariff.—The maintenance of existing preferential railway rates, if possible; if not, then compensation for this loss by additional duty on imported sugars—

the raising of the present duty of £3 10s. to £4 10s. (some ask for £5) per ton, on all imported unrefined sugars.—The imposition of a duty of £6 per ton on all imported refined sugars, provided, in both cases, that should the present preferential railway rates be abolished, then both these duties be raised proportionally in compensation for the loss that would be incurred.

The advantage possessed by Natal sugar producers under preferential railway rates, taking Johannesburg as a central point, is £2 13s. 4d. per ton. Hence the Customs duty on sugar at present, being only £3 10s. per ton, purchasers in Johannesburg, in buying Natal sugar, virtually have the duty reduced to 16s. 8d. per ton, or to 1-10th of a penny per lb. Whereas, but for the preferential railway rates, the duty would be equivalent to 21-50ths of a penny per lb.

Thus far the Commissioners give the case from the point of view of the planters or producers of raw sugar. They then proceed to recite the case from the point of view of the refiners.

## II.—FROM THE POINT OF VIEW OF THE REFINERS.

The evidence of the refiners may be said to agree in the main with that of the planters, hence it is only necessary here to quote a few passages more particularly relating to refined sugars and the interests of refiners—though at the cost of some repetition.

“The necessity for refining sugar is becoming more apparent every day, owing to the fact that, as demand increases, the necessity for a first-class article becomes more and more apparent.”

Unrefined sugar, “when sent inland, and kept for any length of time, becomes damp and lumpy, and is a constant source of annoyance to both buyer and seller. The establishment of an up-to-date refinery in Natal has removed the reproach hitherto attached to Natal sugar, of indifferent quality.”

“In order to establish the sugar industry on a sound basis, it is necessary for the above and other reasons, that the plantation (and central) mills should make a rough sugar for refining purposes, and not attempt to make a white sugar for direct consumption.”

“A refinery employs a large proportion of skilled European labour, and is the means of utilising a much larger quantity of the raw material than is the case when mills supply the market direct.”

“Owing to the fact that the production of sugar in Australia is now practically up to the requirements of the country, the refiners there, who have a contract extending over some number of years with Java, for a quantity of sugar, find it necessary to dispose of this sugar as best they can, and, rather than place it on their own market, where it would have the effect of reducing their price, it is being dumped in South Africa at a considerable loss to themselves.”

“The figures in the Government Report of 1906, in Australia, are as follows:—

|                                           |              |
|-------------------------------------------|--------------|
| Total imports into the Commonwealth . . . | 26,099 tons. |
| Total exports . . . . .                   | 11,158 tons. |

“The exports, being surplus stock, which had to be disposed of, were shipped at a heavy loss, but as the whole sugar industry of Australia is practically worked, or controlled, by one company, they prefer to do this than allow their own market to be glutted. The consequence is, that we are suffering from unfair competition, brought about, not by Australian-grown sugar, but by the fact that their imports into the country are in excess of requirements of their people, which means that it pays them better to export such excess at any price than throw it on their own market; and the fact that South Africa offers them the best field for this, owing to our import duty being (almost) the lowest sugar duty in the world, our industry is suffering accordingly.”

“If the refining industry were fostered here by a special protection, the result would be that the whole of the work of refining would be done in South Africa, and be the means of employing a large number of men.”

“As the sugar industry is growing, it will, in time, probably be unnecessary to import any sugar for South African consumption. Meantime, however, this is not the case, and till we have arrived at this point, I would suggest that, in order to foster the industry of refining in the country, there should be a duty levied on refined sugar in excess of that levied on unrefined.”

“I do not think an increase of duty will affect the retail price to any appreciable extent. Take the higher classes of sugar, such as castor sugar, these are sold retail by the shops at 6d. to 7d. per lb.—our price for these sugars is 3d. Of course, the storekeepers cannot make such a large profit on ordinary sugars. They make about 1d. per lb. on those, our price being about 2d., and the retail price being about 3d.—a profit to the storekeeper of 50 per cent., which is certainly excessive.

“When the production increases to the demand of the country, in my opinion the price will be less than you can import it for.”

“There is at present no stability in the market, for we are ruled by a condition of affairs which is brought about by a false position in Australia.”

“With the increased plant, the estimated capacity is 100 tons per diem.” The approximate value of materials required for one year by this refinery, including railage, coals, pockets, rice, etc., etc., amounts to £67,619 3s. 4d.

“The Cube plant is capable of producing 4,600 tons per annum, and we hope to find a market for, say, 2,300 tons.”

“We can manufacture 3,000 tons of golden syrup, which is equal to the amount imported into South Africa annually, and which is equal to



the best imported in purity and flavour. There should, therefore, be no necessity to import at all."

"The large stock of boxes taken over from the old company will last for some months, but it is the intention of the management to make trials of the various Colonial woods, with a view to their use in preference to the imported article."

"A considerable quantity of the present labels was imported by the previous proprietors, but the present company is placing large printing orders for labels in the Colony.

"The refinery produces the finest quality of every class of sugar.

"Its manufactures are absolutely pure, and superior to the imported.

"Excerpt from the Government Analyst's Report:—

#### Sample 'A.'

|                    | Per cent. |
|--------------------|-----------|
| Sucrose . . . . .  | 99.903    |
| Glucose . . . . .  | .048      |
| Moisture . . . . . | .033      |
| Ash . . . . .      | .016      |

"Sample 'A.' is a pure white crystalline sugar of the highest quality, containing over 99.9 per cent. of pure crystallised cane sugar, with a mere trace of glucose and moisture, and the merest trace of ash (potassium and calcium carbonate). It is pure in colour and brilliant in lustre. 'No trace of any impurity could be found in either sample, beyond the small quantity of natural ash, and this is well suited for any industrial use.'"

"The total wages paid per annum are approximately:—

|                        |          |
|------------------------|----------|
| To Europeans . . . . . | £9,000   |
| To Coloureds . . . . . | £2,500." |

#### RECOMMENDATION.

The Commissioners are impressed with the fact that neither the sugar planters nor the refiners of Natal object to fair competition from Mauritius sugar, all of which is unrefined, but that their objections are solely against the unfair competition from refined Java sugars dumped from Australia.

In view of all the circumstances which have been brought to their notice and have received their consideration, and acting in accordance with their avowed opposition to prohibitive duties, and in accordance with their expressed convictions as to the necessity for protection for local industries the Commissioners recommend that:—

The distinction which formerly existed in the South African Union Tariff, between refined and unrefined sugars should be again recognised, only, that there should be a definition of the two classes, to meet certain clamours from over-sea.

The definition should be as follows:—

- (a) Sugars which have been purified by filtration through animal charcoal (or equivalent process) in a sugar refinery—which shall be called “Refined sugars.”
- (b) Sugars which have not been purified by filtration through animal charcoal (or equivalent process) in a sugar refinery—which shall be called “Unrefined sugars.”

The Commissioners also recommend that, in the event of preferential railway rates being abolished, the duty shall be 6s. 6d. per 100 lbs. on refined sugars, and 5s. per 100 lbs. on unrefined sugars; but that, in the event of the preferential railway rates being allowed to remain as they are, the duty shall be 5s. per 100 lbs. on refined and 3s. 6d. per 100 lbs. on unrefined sugars, as at present.

The Commissioners, in making these recommendations, bear in mind that the latter, if given effect, would help the Colony of Mauritius to regain the *locus standi* in the South African markets, of which Mauritius, after having enjoyed it for a number of years, was deprived by the alteration made at the last (1906) Customs Conference, and which alteration has proved no less disastrous to the Mauritius than to the Natal sugar industry.

## TOBACCO.

The evidence received on behalf of the tobacco industry possessed three main objects:—(1) To show that the duty upon tobacco imported for manufacture into cigarettes and for use as wrappers for cigars should be increased, for the benefit of South African tobacco growers. (2) To show that were the Transvaal to impose a duty upon tobacco grown in Natal, the chief sufferers would be the Transvaal tobacco manipulators, who now import Natal tobacco largely at a very low price and re-export much of it (after treatment) to Natal at a very much higher price. (3) To show reasons why the Excise duty should not be placed upon locally grown tobacco in the States of South Africa.

With regard to the first of these: In view of the fact that taste on the consumer's part, in many cases, governs his selection of the class of tobacco he uses, provided the price is not beyond his means, the Commissioners do not think that a moderate increase in duty would have to any marked degree the effect desired by the applicant. Further, in view of the fact that a severe increase of duty would seriously imperil the existence of the very considerable cigar and cigarette factories now just holding their own, the Commissioners consider that the risks of doing injury to many outweigh the problematical advantages, hence they recommend that the tobacco Customs duties be left as they are.

Coming to the second of the above objects: As there is no likelihood

of the extremists in the Transvaal being successful in their efforts to obtain protection against the other States of South Africa, the Commissioners see no occasion to comment upon this portion of the evidence.

The third object mentioned above, the question of an Excise duty on tobacco, was dealt with at some length adversely by one witness, but, should an Excise duty be necessary for revenue purposes, the Commissioners fail to see that an Excise duty on tobacco would injure any tobacco industry in the country, always provided (1) the Excise duty is similar in all States of South Africa; (2) that a duty is imposed upon South African tobacco entering one State from another equal to the Excise duty; (3) that tobaccos manufactured in one State may be sent in bond from one State to another State.

---

### FRUIT.

---

The Secretary of the Natal Orchard Association, Natal Fruit Growers' Association, and Natal Fruit Farmers' Union, and also the Chairman of Committee of the Inanda Agricultural Association of Victoria County, gave evidence on behalf of the Natal fruit industry.

The latter witness confined his evidence on behalf of his committee to the following: "It is considered that the present position of fruit with regard to duties is satisfactory, and that an export-duty should not be imposed, the industry being unable to bear one of any description."

The first witness set forth the following disadvantages under which the fruit industry is labouring:—

- "(a) An excessive duty payable on box-wood (shooks) of 15 per cent., which wood is unprocurable in South Africa, nor is there any wood which is suitable for the same purpose.
- "(b) A duty of 25 per cent. is levied on printed tissue papers used for wrapping fruit for export."

After giving the witness every opportunity to support his case, the Commissioners consider that:—

- (1) The cost of fruit boxes, amounting to a few pence, is so low that the duty, 15 per cent., on these only amounts in some cases to about three farthings per box;
- (2) That the 25 per cent. duty on printed wrappers, involves a very insignificant sum, in individual cases;
- (3) That the advantages gained by individual fruit-growers would consequently be ridiculously small in proportion to the loss which would be occasioned to the revenue by removing the duty on all boxes (dynamite, tea, soap, candle, sweetmeat, matches, etc.), as would necessarily follow the removal of the duty on shooks for fruit boxes.

Moreover, and this is more particularly within the scope of the Commissioners' reference, the removal of the present small duty of 15 per cent. on box shooks, they are advised, would ruin a considerable and promising box-making industry recently established in Natal.

The removal of this small duty, by ruining the prospects of the box-making industry, would also discourage farmers from planting the White Poplar, a wood which has been found well suited to Natal, and to both the match (for splints and boxes) and the box-making industries.

*Note.*—Assertions were made in evidence that box-shooks for fruit-packing are admitted free into Cape Colony. On enquiry the Commissioners have found that this is not the case.

---

### JAMS, ETC.

---

The evidence received in regard to this industry went to show that:—

"The protection afforded under the present tariff and (local) preferential railway rates is sufficiently adequate and fair providing that all raw materials used in the manufacture of these articles are admitted duty free or duty rebated where bought out of duty paid stocks, except, of course, in such cases where the raw materials, such as sugar, vinegar, and fruits can be produced in the Colony of sufficient quantities and at reasonable rates."

The loss of the advantage of preferential railway rates on through traffic, owing to the rates on Colonial-made jams from Durban to Johannesburg being raised at the 1906 Railway Conference, to the same class as imported jams, *i.e.*, from 32d. per 100 lb. to 59d. (nearly double) was a severe blow to the industry, and has resulted in the business in this commodity, so far as Johannesburg is concerned, "becoming practically unremunerative but sufficiently (*sic*) to warrant our carrying on business in this line with the hope of the old order of things returning, and thereby keeping in the market."

The manufacturers of jams are as emphatic in their protest against the O.R.C. bounties as are the cake and biscuit makers and the manufacturers of confectionery. Owing to the bounty received by jam makers in the O.R.C. they can undersell the Natal makers by 1s. a dozen in Johannesburg, and this fact, coupled with the higher railway freight (owing to extra distance) on Natal jams, renders the business "not worth doing at the price." Thus not only are the Natal makers virtually shut out of the O.R.C. by the bounty, but out of the Transvaal as well.

Speaking to the effect of the present duty on jams, a witness said:—"I think that the duties imposed on goods that are likely to come into competition with Colonial industries have had the effect of bettering the quality. Of course, the idea was that, if you protect jam by putting a duty on imported jams, you put that into the manufacturer's pocket. I always



argued, and I am glad to say that it has proved correct, that that is not the effect. You give encouragement for capital to come into the country, and where we had only one or two competing against us we have 13 or 14 competing, so we have to make the goods very much better and sell them at a lower price."

The same witness, being asked if he found the 15 per cent. duty on imported box shoos any inconvenience, replied that "it is very trifling."

As again showing how the establishment of one industry leads to work for others, it is stated that the jam and condiment makers in Natal make their own tins.

#### RECOMMENDATIONS.

While regretting the hardship the O.R.C. bounties have inflicted upon the jam and kindred industries in Natal, the Commissioners, having been informed officially that the payment of bounty upon jams ceases on the 8th May, 1910, recognise that it would be inadvisable were they to recommend at this date the imposition of countervailing duties, as otherwise they would have felt compelled to do.

They see no sufficient reason why the duty on jams should be changed (always provided that the duties on any of the raw materials not obtainable in the Colony are not raised), as, in view of the facts disclosed in evidence, Natal jam makers should be able to hold their own on the inland markets when the time comes for the payment of the O.R.C. bounties to cease.

#### FRUIT SYRUPS, ETC.

The evidence received goes to show that in Natal lemons are plentiful and limes fairly so, and of varieties and qualities suited to the manufacture of the best lemon and lime syrups, squashes, and cordials, though the cultivation of limes in Natal is not now what it was; whereas statements were also made in evidence, and confirmed by Mr. H. H. C. Puntan, F.C.S., Public Analyst for the Borough of Durban, to the effect that a good many of the imported fruit syrups, cordials, squashes, are not what they purport to be, and that in some cases there is no fruit juice in them at all, but only the flavour of it. "These cordials are made with sugar and glucose and a little lemon (essence) makes lemon syrup." "A surgeon in England in charge of the Liverpool Infirmary used lime juice very largely for rheumatic fever, and he found in many cases when he failed to obtain a mitigation of the fever that the lime juice was impure. As Borough Analyst I should like to stop a lot of that stuff, but we have not the power under the Adulteration Act to do anything."

A local manufacturer stated:—"I think that most of the (imported) lemon squash that comes in here is faked; it never saw a lemon." The witness made an exception of one well-known brand of lime juice. Some

imported lime juices, etc., contain spirit. If they contain less than 3 per cent. of alcohol the duty charged is 25 per cent. If they contain more than 3 per cent. of alcohol, then the spirit duty is charged at 20s. per gallon. The witness stated that he "buys lemons at 5s. a sack, and my price for the squash is 7s. a dozen bottles, wholesale. That is the lowest price I can sell at. The imported stuff is landed here for about 6s., less than I can produce it at"—though the lemons and sugar are produced in the Colony. He accounts for the low price of the imported article by the fact that it "is not made of lemons."

A Commissioner remarked to the witness, "I suppose you would say that the man who gave evidence in Capetown (to the Cape Colony Commission) regarding his importations being made of pure lemons was exercising his imagination a good deal?" To which the witness replied: "I expect he was."

In pointing out the costs of manufacture, as the reason why less than 7s. per dozen bottles could not be charged, the witness stated:—"The case costs a shilling, the bottles 1s. a dozen, the straw envelopes 5d. a dozen; then there are the labels, capsules, and the labour."

The witness asked that:—"All imported lemon squash, and lime juice cordial, containing over 3 per cent. of alcohol be charged the full duty." This is at present the case under the 1906 tariff.

#### RECOMMENDATION.

The Commissioners consider that in this, as in several other importations of faked articles of consumption, the importation of imitation articles for consumption, bearing the names of genuine articles, *and without any intimation on the labels, or covers, to show that they are not genuine*, should preferably be prevented by the strict application of an adequate "Adulteration of Foods and Drugs Act."

In this case, however, the Collector of Customs advises that "if any party who may be concerned will give me a written notification that any syrups, squashes, etc., are faked, I will have them stopped and tested, and if what the parties state is correct, I have power to seize the goods under the Marks Law, always provided that such faked syrups imply in any way they are *bona fide*."

The Commissioners consider that the present tariff meets the requirements of local manufacturers of fruit syrups, etc., and recommend that no change be made therein.

#### CREAMERIES.

Evidence was given representative of the now important Natal creamery industry. Its tenor can best be gathered from the excerpts from the evidence given below.

The object of the representative witness was to show conclusively that this industry in Natal cannot possibly afford any reduction in the present

duty of 2½d. per lb. (or 2d. from the United Kingdom and reciprocating Colonies).

The average price farmers receive in Natal all the year through, from the creameries, is equivalent to 1s. 2d. per lb. of butter. That is not a very profitable price now, because of the depletion of stock by tick fever and other causes, and the impossibility of increasing it. However, "as time goes on, and as the milking qualities of the cattle improve, we will be able to produce it at a very much lower figure." "In some parts of Cape Colony they are only getting 8d., and they are quite satisfied. That is where they are a distance from the markets, but they have no redwater there nor tick fever." "They have Ayrshire cattle and shorthorn cattle, and at 8d. a lb. they will make more out of it than the farmer here (in Natal), who is getting 1s. 2d., where diseases restrict the importation of heavy milking stud stock, and thus prevent rapid improvements being made in the milking stock—except through the slow and difficult method of improvement by selection."

"The increase in the production of butter in this Colony during the last year has been 100 per cent. That is not an increase in the supply to the creameries, but an increase in the actual production. We alone\* have supplied something like 75 separators to men who never had a separator before this season. The whole thing is growing into a big affair. I think that in two or three years' time, we will be able to carry stocks right through the winter, and supply the merchants right through the winter by getting in cold storage. Now they are working on a margin of profit, but if the very slightest deduction is made, the farmers will be most seriously affected."

"If for revenue purposes, or any other purpose, they wish to increase the duty, I should say increase it by ½d. a lb., because during the next two or three years, if encouragement is given to the butter trade, all importation will be stopped." He was asked if he "did not think that putting a ½d. per lb. would be rather a hardship, assuming you had a bad season, and could not supply?" The reply was:—"But then there is this about it; if encouragement is given to the creameries now established, and to be established, they will put up cold storages, which will carry supplies right through the winter, and to do that they want a little bit to cover the cost, and that a ½d. per lb. would do it. We could make butter (and are making it now and selling it at about 1s. 3½d. a lb.) sufficient to run our factory all through the year (if the milk supply were available.) We are only working about six months in the year, but we keep our staff together and keep our machinery going. If we have to carry stock over six months in the year and run refrigerators all that time, pay interest on money, insurance, and so on, we must work to some profit by keeping butter for winter. If we do not keep butter for winter, we are not going to collar

The witness refers here to the particular creamery in which he is interested.



the South African winter trade. There is one fault which I feel: the grocer says:—'I will take your butter for a year if you can supply it.' If we could do so all through the year (by daily production) I am quite satisfied; but, if we have to carry half our production for six months in the year, allowing for interest, insurance, depreciation, and so on, I think we should have more protection."

"It is not practicable for us to avail ourselves of the present cold storages. We must store our butter (for winter) in bulk. We would have to send it to Maritzburg or Durban, store it there for so long, out of reach of our control of temperature (which is all important): then we would have to bring it back for making into pats for selling. To be successful, a cold storage must be under the control of the Factory Manager (on the spot); he can (then) see as to the temperature, and that nothing goes wrong with the butter. Records are, of course, supposed to be kept of the temperature (at outside cold storages), and I know that on steamers there is a temperature record, but these are not always reliable."

Asked "How would a general policy of doing away with the preferential rates affect you?" the witness replied:—"It would affect us very considerably. I advocate preferential rates on the whole of the produce of the farmer."

#### RECOMMENDATION.

The Commissioners consider that the present duty on butter meets the present needs, but that it should not on any account be reduced. But should the preferential railway rates be abolished, then a compensating increase should be added to the present duty.

[The other industries with which the Report deals, and which are less closely connected with the interests of the farmer, but with which he is nevertheless in some measure concerned, are held over for consideration in our next issue.]

---

The Lourenco Marques *Guardian* states that, by a Proclamation dated March 18th, an Agricultural Department has been created in the office of the Secretary-General, upon which Department is incumbent the direction of all official agricultural services in the Province of Lourenco Marques. By the same Proclamation certain experimental agricultural stations are also created in the districts of Lourenco Marques, Inhambane, and Quelimane, with permission to establish similar stations later on at Tete and Mozambique. The Veterinary Department, created some time ago, will form a branch of the Agricultural Department.



## ***Ticks and East Coast Fever.***

THE following minute by the Government Entomologist (Mr. Claude Fuller), is published by order of the Minister of Agriculture for general information:—

I have the honour to transmit, for the information of the Prime Minister and the Minister of Agriculture, the accompanying statement concerning matters relating to tick eradication as such applies to the control of East Coast Fever.

1. I have carefully reviewed all reliable references bearing upon the subject, and base my statements upon unimpeachable authority.

2. The life cycle of the Brown Tick has been definitely ascertained to be as follows:—

|                                                                                   | Minimum.      | Maximum.        |
|-----------------------------------------------------------------------------------|---------------|-----------------|
| <i>a</i> Egg Stage ... ..                                                         | 13 to 35 days | 5 months        |
| <i>b</i> Larva stage (searching for host) ...                                     | 1 day         | 6 months        |
| <i>c</i> Larva feeding ... ..                                                     | 3 days        | 12 days         |
| <i>d</i> Larva moulting into nymph ...                                            | 16 days       | 26 days         |
| <i>e</i> Nymph searching for host ... ..                                          | 1 day         | 7 months        |
| <i>f</i> Nymph feeding ... ..                                                     | 2 days        | 6 days          |
| <i>g</i> Nymph moulting into adult ...                                            | 20 days       | 3 months        |
| <i>h</i> Adult searching for host ... ..                                          | 1 day         | 6 months        |
| <i>i</i> Adult female feeding ... ..                                              | 4 days        | 12 days         |
| <i>j</i> Adult female resting between leaving host and commencing to lay eggs ... | 6 days        | 37 days         |
|                                                                                   | <hr/> 67 days | <hr/> 28 months |

3. The maximum period of 28 months shown in the above analysis could only occur with a winter of 12 months' duration.

4. Actual experience shows that the whole cycle of development is undergone in a period of 73 days as a minimum and 7 months as a maximum.

5. Dipping regularly every 14 days has been conducted for nine months without injury to any animals, cows in calf and just calved being dipped without any ill effects.

6. Regular dipping or spraying at intervals of eight days has been found to blister after two treatments; and, if continued, will result in skin sores and skin poisoning.

7. Regular dipping at intervals of 14 days for a period of nine months does not eliminate ticks from a farm, although it considerably reduces the number. Even Blue Ticks (the easiest dealt with) have been found present after nine months regular dipping at this interval.

8. Dipping at intervals of eight days has no effect in preventing East Coast Fever *on infected veld*, and a lesser interval cannot be contemplated.

9. Ten days must be regarded as the minimum interval between dipping or spraying of cattle.

10. Ticks will go on to sprayed or dipped animals as soon as they are dry; and, in view of the fact that a nymph may feed no longer than two days, no practical treatment could be devised to destroy such before they acquire infection from a diseased beast. This contention is not weakened even if the maximum period spent by the nymph in feeding, namely, six days, is the more frequent occurrence.

11. Dipping as a control method *on infected veld* cannot be entertained.

12. Ticks do not travel any distance of their own accord; they are spread abroad by "any moving object" which may brush against them. Their instinct leads them, when rendered active by warmth, to climb up any adjacent object, and to seize upon any passing object animate or inanimate. Further, they possess specially organised limbs for carrying their native instinct into effect.

13. Moving objects may be classified as animals (man, beast and birds), clothing, vehicles and wind-borne grass stems.

14. These means of distribution are practically only potent when the grass is long. Even cattle have less ticks upon them when the grass is short.

15. Practical experience shows that distribution by birds, vehicles, clothing and wind are not factors of any consideration in the distribution of pathogenic ticks.

16. The tick bird is to be regarded as the least important factor of any in the possible distribution of ticks of any sort. This bird feeds upon ticks in all stages. A tick climbing on to a bird either from the veld or from a beast, if not immediately picked off and eaten, would be devoured directly the bird noticed its presence.

17. The blood noticed upon the beaks of tick birds is that imbibed by large ticks which are pecked before being swallowed. Transmission of East Coast Fever or any other tick-borne disease by this blood is absolutely impossible.

### CONCLUSIONS.

I have been convinced that:

1. If a clean farm is fenced and no cattle allowed to come on to it

excepting such as have undergone a six weeks quarantine in a separate paddock and *all* of them proved to be free from the disease, East Coast Fever will not appear on that farm even in an infected area.

2. If dipping or spraying is regularly employed on such a farm (say every 12 to 14 days), at the end of 12 months the ticks will have been so considerably reduced in numbers that should pathogenic ticks be introduced on to that farm—by accident or design—the owner's chances of saving most of his cattle (on an outbreak occurring) by immediately removing them into clean paddock, eliminating the infected and again shifting on to clean veld every 20 to 25 days until no fresh cases develop and keeping cattle from the infected patches of the farm for 15 months, the majority of the cattle will be saved and the farm gradually and naturally cleansed of disease.

3. If, however, cattle are allowed to enter the farm without quarantine, or ox-transport is indulged in, or the cattle are driven to a common dipping tank, sooner or later the disease will break out on the farm.

CLAUDE FULLER,

Government Entomologist.

*The Dairy* of 15th March incorrectly states that "a condensed milk factory has been established in Natal." The factory referred to is evidently the one recently established in Cape Colony—at Port Elizabeth.

A competition of an interesting nature, and one worthy of imitation by country schools in Natal, has, we learn from the *Barbados Agricultural News*, been carried out at the Antigua Grammar School. In June last Dr. Watts offered, on behalf of Mr. A. M. Lee, prizes for the best samples of selected maize grown by the boys. The management of the competition was taken over by the Agricultural and Science Master (Mr. A. H. Kirby, B.A.), who instructed the boys as to the qualities to be sought for in the ears of corn chosen for seed purposes. Three ears were selected by each boy, and the seed was sown in any place where the boy could keep a watch on the growing plants. Four boys succeeded in bringing the mealies to maturity, and each lad then chose, for the purposes of the competition, what he considered to be the ten best ears on his plot. These were submitted to Mr. Kirby, who awarded the prizes. Arrangements are being made at the school to hold a second competition of a similar nature.

## ***Natal Agricultural Union.***

ANNUAL CONFERENCE, 1908.

### REPORT OF PROCEEDINGS.

THE annual Conference of the Natal Agricultural Union opened in the Supper Room of the Town Hall, Pietermaritzburg, on Tuesday, 14th April. The President of the Union (Rev. Jas. Scott) occupied the chair. The following Associations were represented by the delegates mentioned:—

- Acton Homes Farmers' Association (G. L. Coventry and W. C. Coventry);
- Alexandra Agricultural Society (H. Bazley);
- Blood River Farmers' Association (S. Grobeler);
- Boven Umvoti Boeren Vereeniging (G. J. van Rooyen, jun., and R. J. van Rooyen);
- Byrne Farmers' Association (E. W. Cunningham and B. W. Talbot);
- Camperdown Division Farmers' Association (J. Moon and H. Baker);
- Charlestown Farmers' Association (J. Vos, jun., and G. W. Thomas);
- Donnybrook Farmers' Association (W. A. Walton and W. K. Anderson);
- Dronkvei Farmers' Association (A. W. M. Perceval and E. Marriott);
- Dundee Farmers' Association (J. Dyson and Y. N. de Waal);
- Durban and Coast Agricultural Society (E. W. Evans and T. T. Burman);
- Glencoe Farmers' Co-operative Society (H. Wiltshire);
- Gourton Farmers' Association (R. Gray and J. F. Woods);
- Highflats Farmers' Club (W. Gray);
- Howick Farmers' Association (T. Morton);
- Inanda Agricultural Society (W. A. Campbell and W. W. Sykes);
- Ixopo Agricultural Society (C. E. Hancock and J. Anderson);
- Ixopo Farmers' Association (T. E. Remfry and C. C. Way);
- Klip River Agricultural Society (D. R. Bester and A. W. Illing);
- Krantzkop Farmers' Association (M. Landsberg and G. T. van Rooyen);
- Ladysmith Farmers' Association (J. G. Bester);
- Little Tugela Farmers' Association (G. J. van der Merwe);
- Lower Tugela Farmers' Association (W. R. Hindson and Col. Friend Addison);
- Lower Umzimkulu Farmers' Association (C. H. Mitchell and Col. J. T. Rethman);



- Malton Farmers' Association (C. L. Lund and R. W. Comins) ;  
Mid-Illovo Farmers' Club (J. W. V. Montgomery) ;  
Mooi River Farmers' Association (H. Baker) ;  
Newcastle Agricultural Society (F. A. R. Johnstone) ;  
New Hanover Agricultural Society (Rev. Jas. Scott and G. C. Mackenzie) ;  
Noodsberg Road Agricultural Society (H. Bruyns and J. H. Holley) ;  
Normandien Farmers' Association (C. J. de Villiers) ;  
Nottingham Road Farmers' Association (Jas. King and W. Henwood) ;  
Richmond Agricultural Society (John Marwick) ;  
Richmond Road Farmers' Association (W. L. Stead and T. E. Horwood) ;  
Rosetta Co-operative Society, Ltd. (E. E. Downing and C. R. Heenan) ;  
Royal Agricultural Society of Natal (D. C. Dick and O. Hosking) ;  
Seven Oaks Farmers' Association (W. J. Newmarch and J. M. van Rooyen) ;  
Slangriver Farmers' Association (J. P. Botha and P. L. Uys) ;  
Umvoti Agricultural Society (J. M. Handley) ;  
Umvoti Farmers' Association (G. Leuchars) ;  
Upper Biggarsberg Farmers' Association (W. L. Oldacre) ;  
Utrecht Farmers' Association (D. van der Spuy and T. C. van Rooyen) ;  
Vryheid Chamber of Commerce—Agricultural Section (David Crole) ;  
Vryheid Farmers' Association—Ward 1 (A. von Levetzow) ;  
Vryheid Farmers' Association—Ward 2 (T. W. Dukes) ;  
Weenen Agricultural Society (Allan Stuart and J. H. K. Miller) ;  
Weenen Farmers' Association (H. E. Calder) ;  
Zululand Sugar Planters' Club (A. C. Greig and D. H. Moberley) ;  
Mr. Wm. Greig attended as a member of the executive committee.

#### THE GOVERNOR'S SPEECH.

At 11 o'clock His Excellency the Governor and his aide-de-camp, accompanied by the Right Hon. F. R. Moor (Prime Minister), the Hon. W. A. Deane (Minister of Agriculture), and his Worship the Mayor (Mr. A. W. Kershaw) arrived and was welcomed by the chairman.

His Excellency, addressing the meeting, said:—

"Gentlemen,—I have first to thank you for the honour you have done me by inviting me to open this Conference, and to express my sense of the importance of the institution which first under the name of 'The Natal Farmers' Conference' and then under its present designation, has for the last 17 years brought together annually from all parts of Natal representatives of the Colony's foremost industry. Next I have to welcome,

and this I do most cordially, representatives of most, if not of all, the 69 different associations and societies of which the Union consists, and to thank them, on behalf of the Colony, for assembling here to-day in the public interest. Thirdly, I will, as you probably desire I should, make a few remarks on the 84 resolutions which are for your discussion during the next three days.

"Nineteen of these resolutions, or nearly a quarter of the whole number, deal with East Coast Fever, which at the present time is naturally occupying more than any other matter the attention of Natal farmers. After seeing, as I have done, the ravages of the disease in Zululand, where, through most of the country, herds have been not decimated but annihilated, I cannot wonder at this anxiety. Since, however, the agenda for the present Conference was prepared, a meeting between representatives of the Government and of the farming interests has been held in this City to discuss this question of East Coast Fever, and the decisions come to as a result of this meeting will doubtless render it unnecessary to move some of the resolutions that were to be brought before the present Conference. For instance, six of the resolutions on the agenda paper deal with the movement of cattle. I understand that as a result of a recommendation made at the meeting of the 25th and 26th March, to which I have referred, the Government propose, for the purposes of East Coast Fever, to divide the whole Colony into districts, and to give to the residents of each district control over this movement within their own boundaries.

"Other resolutions which were passed at that meeting will, as the country has been informed by the Minister of Agriculture, be adopted as far as practicable, and no doubt those that may be passed at this Conference, after full consideration by the delegates, will receive equal consideration by the Government. But I do not expect that resolutions involving large further expenditure of public money, whether raised by loan or by taxation, will be looked upon, in the existing state of the Colony's finances as practicable, and I feel sure that it is rather to their own organised efforts than to increased expenditure by the Government that the farmers will have to look for dealing with this dread disease in the future. I may add that to a layman it appears that if the disease can be checked by killing the ticks, this would be a more satisfactory way of dealing with it than by killing the cattle, and that from this point of view the resolution of the recent meeting in favour of dipping appeared to me satisfactory.

"The resolutions 21 to 33, under the heading of Railways, are nearly all in favour of a reduction of rates on agricultural produce. It may help your consideration of these resolutions, when they come before you, if I make the position of the railway clear to you. Last year, out of a turn-over something approaching two millions sterling, the total surplus of the Railway Department amounted to £9,000. This shows that unless

the railways are to be worked at a loss, *i.e.*, not be paid for by the persons who use them, or unless there can be a reduction in working expenses, there is no room for a further reduction in revenue, *i.e.*, in rates. I am informed that so far from there being any likelihood of expenses being reduced, they are increasing, owing to the down traffic, which is replacing the former up traffic, being more bulky and therefore more costly to carry.

“What is happening is that the country is being developed so as to produce its own requirements, and Customs and railway revenue derived from importations is therefore decreasing. This is no doubt satisfactory from the point of view of producers and manufacturers, but it is difficult to see how it will be possible ultimately to avoid an increase in the rates on local produce and manufactures to make up for the loss on the high rated importations they have replaced.

“I am perhaps more strictly bound by the rule of the Union forbidding political discussion than, judging from some of the resolutions that appear on the agenda paper, is the Union itself, and I must therefore be careful how I refer to paragraphs Nos. 34 to 42 of the agenda, which deal with native affairs. I will do no more than put in a plea, probably unnecessary, for sympathetic treatment by the Union of questions affecting the black population of Natal. That population, furnishing as it does the Colony’s main unskilled labour supply, is scarcely less essential to the operations of the farmer than is the land itself, and the labour, like the land, requires generous treatment in order that it may yield to the cultivator the full return of which it is capable. I see that there are resolutions on the agenda, one for and one against the adoption of the report of the Natal Native Affairs Commission. The recommendations embodied in that report, dealing as they do with many aspects of a large and complicated question, cannot usefully be adopted either by this body any more than by the Government *en bloc*, and if the present Conference deals with these recommendations in detail they will, I fear, have little time to devote to agricultural subjects. The Department of Native Affairs has given consideration to the report, and the Minister in charge of that department informs me that he proposes in the next session of Parliament to introduce Bills dealing with its recommendations. If Parliament adequately represents the interests of the farmers of the Colony, and they say in Durban that it more than adequately does this—(laughter)—then I think that general questions of Native policy might be left by this Conference to be dealt with by that body when the Bills to which I have referred are introduced.

“The resolutions (43 to 47) on the subject of public roads, refer to a matter also requiring the earnest attention of Parliament, which would doubtless be helped by any unanimous expression of opinion by this Conference.

“With regard to the resolutions (48 to 50) which deal with locust destruction, I may mention that I heard in the Lower Umfolosi and

Umlhazi Divisions, not only from the chiefs but also from the Magistrates and from some of the farmers, that the Natives were cordially assisting in this work. I need not say that I lost no opportunity in pressing on them the desirability of continuing to do this, and I have little doubt, if they are furnished at the proper time next year with the requisite materials, they will work with redoubled vigour.

"The Asiatic question (resolutions 51 to 56) is ground on which I fear to tread, but it will I hope not be unconstitutional if I express my personal convictions that it would be far better for the Colony if it would depend more on indigenous Bantu and less on imported Hindu labour—(applause)—and I feel also that the longer the importation from India goes on the less will be the power of the Colony to deal with Asiatic aliens who are already in the country, with that fairness of treatment which it is the nature of the white man to extend to men of other and weaker races.

"The resolutions dealing with industrial progress (Nos. 57 to 64) largely come from Vryheid, and show great faith in the power and resources of Governments. Those dealing with grants to Agricultural Societies (65 to 67) are practically requests for the support of these societies by the general taxpayer, as distinguished from the agriculturists who are more directly interested in them.

"The remaining resolutions (68 to 84) deal with miscellaneous subjects, some of which appear to me to be very practical and to the point, while others are much less directly connected with the main objects of this Union.

"Gentlemen, this very cursory review of the heads of your agenda paper will indicate to you generally how many interests and subjects you will be called upon to deal with during the next three days. Your proceedings in that time are sure to be scrutinised with the greatest keenness, not only by the Government and myself, but by the whole Colony, town and country. This is no ordinary meeting of a local body to deal with petty matters, but a veritable parliament of farmers, who have come together on their own initiative at a critical period of the Colony's history, to discuss matters on which the direct interests of a large class of the community and the indirect interests of the whole community depend. If this discussion is carried on in a spirit, not of dependence on assistance from others, but in one of brave self-reliance, of willingness to merge local and private interests in a care for the public weal, of deep love for the fair country won for you by your fathers and to be handed down by you to your children, then the Conference will bring forth high results. In the devout hope that it may be so, I declare the Conference open and I ask God to bless its labours." (Applause.)

His Worship the Mayor then welcomed the delegates on behalf of the Council and citizens of Pietermaritzburg. He assured them of the deep



interest which would be taken in their deliberations by the people of Maritzburg. Maritzburg looked to the farmers in the surrounding districts to a great extent for its support; and it could not be denied that the commercial welfare of the country depended to a very great extent upon agricultural progress. He regretted to say that the depression was still with them, but he felt confident that they were on the eve of better times. He extended the delegates a hearty welcome, and trusted that their deliberations would have a successful issue.

The Prime Minister then briefly addressed the Conference. He said that the Government attached the greatest importance to these gatherings, and he was prepared to say that any resolutions submitted by the Conference would have the most careful attention of the Government. He trusted that the deliberations of the Conference would not only be to the good and advancement of the interests represented by the Conference, but also to the interests of the Colony as a whole. He promised that the Government would do all they could to assist them. He realised the grave questions they had to deal with, discuss, and come to conclusions upon, and all these questions, he felt satisfied, would receive the careful consideration they deserved. He felt that these gatherings were a great power in the land, and being a great power, it behoved them to give them more weighty questions the more careful study and thought in consideration of the fact that, whatever conclusions they might come to, they would have a considerable influence in the shaping of the agricultural policy of the future.

#### EXECUTIVE COMMITTEE'S REPORT.

The following report of the Executive Committee was read:—

"Gentlemen,—Your executive desires to report on the action taken on the resolutions passed at last Conference and upon its work during the year.

*"Resolutions.*—The resolutions passed at the April Conference, with printed copies of the proceedings, were forwarded to the Government on May 23rd. At the date of this report no replies have been received.

*"East Coast Fever.*—In conformity with the resolution of Conference, Government appointed Advisory Boards to deal with East Coast Fever. The regulations governing these boards did not appear to be satisfactory, and after interviewing the Government, and obtaining the opinion of Advisory Boards, a new set of regulations was compiled by the executive and forwarded to the Government for consideration.

*"Mealie Union.*—This Union has been formed. Mr. G. D. Alexander, who was elected president, was obliged to resign on account of pressure of business. Mr. Thos. Hyslop was appointed in his stead. Copies of the rules may be obtained from the secretary of the Union.

*"Fruit Union.*—A good deal of labour was expended in endeavouring

to form a Fruit Growers' Union. It was decided to abandon the idea for the time being.

*"Inter-Colonial Union.*—The report of the annual congress of the Inter-Colonial Union is on the table. Copies are available for use of delegates.

*"Financial.*—The accounts show that the Union is self-supporting. It would greatly aid the administration of the Union if the societies paid subscriptions when due. There is a considerable sum outstanding at the date of this report. If this is paid up it is anticipated that there will be a fair balance to the good at the end of the current year.

*"Conduct of Business.*—The agenda has been drawn up on the same principle as formerly, resolutions being placed in order of receipt by the secretary, subject to later received resolutions on subjects taken early being placed under their proper headings. This modification has resulted in certain resolutions received last coming on early in the Conference. Compensation for this, however, exists in the facility given to business by grouping the resolutions under subject heads."

The Executive Committee also reported the affiliation of thirteen new societies since the last Conference. These are: Boven Umvotie Boere Vereeniging; Agricultural Section, Vryheid Chamber of Commerce; Krantzkop Farmers' Association; Rosetta Co-operative Association; Glencoe Farmers' Co-operative Society; Witfolozie Boere Vereeniging, Ward III., Vryheid; Weenen Farmers' Association; Normandien Farmers' Association; Acton Homes Farmers' Association; Zululand Sugar Planters' Club; Byrne Farmers' Association.

#### PRESIDENT'S ADDRESS.

The President then read his report as follows:—

In rising to move the adoption of the committee's report, it is usual for your President to review the condition and progress of agriculture for the past year. Were it not for one black cloud which is hanging over us, and which is slowly, but I am afraid surely, spreading, we might, I think, congratulate ourselves, if not on a very prosperous, at any rate, on a season rather above than below average. East Coast Fever is the black cloud which has ruined some of us, and is now threatening many more. Before concluding I will refer further to this subject.

#### A RETROSPECT.

It occurred to me that it might be interesting to look back for a moment, and take a glimpse at the past life of the Union. In looking over our records, I was surprised to find that we are not yet of age; that whatever faults we *have*, or whatever mistakes we have *made*, may well be put down to youthful indiscretions, which now that we are approaching the age of manhood will not, I trust, be repeated. We have not yet passed

our 15th birthday, yet we are, I believe, feeling the responsibilities of our position, and will, I trust, from this time forward, take a more prominent and effective interest in the daily life of the farming community of the Colony. The first meeting of what is now called the Natal Agricultural Union, then called the "Farmers' Conference," was held November 27th, 1891. Ten societies were then represented. To-day our roll includes 74 societies. From that date annual meetings have been held in Pietermaritzburg, sometimes two, and even three, general meetings have been held when occasion required. During our existence, I find that we have given the Colony one Premier, one Treasurer, one Minister of Lands and Works, two Secretaries of Native Affairs and two Ministers of Agriculture, besides many members of the Legislative Council and Legislative Assembly. No doubt we take the credit of having brought forward those gentlemen, and made them capable of filling the positions they occupy, or have occupied. Of course, we feel that some of them did not remain long enough with us to be *perfected* in Statesmanship. I trust in future we may send up many more Statesmen to guide the affairs of the Colony. The question is often asked, What good does this Union do? What is the use of this "Farmers' Parliament?" Some think, and say, that all we do is to waste time in a lot of empty talk; we meet and pass resolutions, and there is an end of the matter. Now I think that those who speak thus are very much mistaken. These annual gatherings, even were there no further outcome than the free exchange of opinions, and the friendly intercourse of men from different parts of the Colony, would be well worth the time and trouble spent on them. We, however, do a great deal more, and a look through our records, especially the work done in committee, will show that a great deal of valuable work has been done for the farming interests of Natal. Our records show that no small portion of recent progress in Natal farming, has originated from the Natal Agricultural Union. Amongst the benefits we may claim to have given the Natal farmer, I may mention the reduction of Lung sickness in cattle, and scab in sheep, which undoubtedly have come about through the ventilation of these subjects in the Union. The greater protection the farmer has from railway fires was certainly brought about by the action of this Union.

We will now turn to some of our leading productions.

#### HORSES.

The price of horses has been somewhat lower than during the previous year. At the time of the expedition to Zululand, the price advanced, but has now receded to a lower average than has been known since 1901. The loss by horsesickness has not been heavy; the precaution of smoking stables seems of considerable assistance in warding it off. The immunising of mules appears to be a success; but as yet it is not so successful with the horses. Mr. Watkins-Pitchford, as you will see from his statement, is very hopeful.



## CATTLE.

A favourable winter and early spring leaves little for the cattle farmer to complain about—always excepting the ravages of East Coast Fever. Stiff or three days' sickness has been very prevalent, but has done but little harm. The price of cattle has naturally been effected by the dread of East Coast Fever. Slaughter cattle have generally been saleable at from 25s. per 100 lbs. upwards. This, I suppose, is about the price for which we may look in the future. With the increased growth of Paspalum and other cultivated foods, there should be a bright future before the stock-owner, always supposing that we can get rid of East Coast Fever and other similar diseases. Experts have, I am told, expressed their opinion that South Africa is the place where the world must look to for any increase in the future supply of beef. That this supply may be forthcoming, we must take active measures to control the disease, and also to improve the grade of our cattle.

## SHEEP AND WOOL.

So far as I can learn sheep farmers have had a successful year; the price of wool in the early part of the season was exceptionally good. Owing to the commercial crisis in America, there was later on a considerable drop, from which it has only partially recovered. Inoculation for Blue-tongue is highly spoken of by many sheep farmers. Attempts are being made with hopeful results to introduce sheep into districts where hitherto they have not thriven. If even a mutton-producing sheep can be bred, it will be a great advance on the common goat, which has at present possession of a considerable portion of the Colony. It appears to me that the haired Persian is not yet sufficiently appreciated. The immunity from disease, the rapid increase and early maturing give great hope that they will yet spread over Natal, and stop the importation of frozen mutton. When at Cedara recently I saw six woolled Persians; they were not very attractive animals, but if they are as disease-resisting as their haired countrymen, they may yet prove to be worth their weight in gold to Natal. My attention has been called by a Durban wool-broker to the necessity of Natal wool-growers being alert to hinder the spread of *Xanthium Spinosum*, the burr of which I am told is in evidence in wool from Transvaal and O.R.C., but from which, as yet, Natal wool is free. A number of sheep carrying this burr-seed have recently been imported from overseas into Natal. This raises the question of whether this weed is to be eradicated or let run—a very difficult and serious question. The export of wool from Natal has risen from £536,000 in value in 1906 to £637,000 in 1907. As the whole number of woolled sheep in Natal is slightly over 500,000, we cannot consider more than £100,000 worth of that wool as produced in Natal. I have been requested to draw the attention of sheep



farmers to the value of wool *sorting*. A letter on the subject lies on the table, and if anyone wishes to see it it will be passed round.

#### PIGS AND BACON.

From time to time attempts have been made to establish a ham and bacon industry, but without much success. I see the prospectus is issued of another attempt. The names on the prospectus are so good that we may be quite sure that everything will be done to make it a success. When at Cedara lately, I observed the breeding of pigs was being carried on in paddocks fenced in with wire netting. This appears to me a likely plan to succeed.

#### MAIZE.

A large acreage has been planted during the past season. In some parts of the Colony the crop promises well; in other districts hailstorms, drought, grub and red-weed have caused considerable damage. I am sorry to have to add that last week frost has done some mischief to late fields, so that it is hard to estimate the crop. From the best information I can get, the crop for the whole Colony will not be much, if anything, below average. From all that I can learn of the coming crop throughout South Africa, I do not anticipate that there will be any large quantity to export during the present season. Last year the export of mealies to Europe was stimulated by the low railway rate charged, and by the cheap freight given to mealies for two years by the Shipping Ring. Time only will reveal whether we have not yet to pay dearly for this concession. Whether it was fair to reduce railway charges on mealies and raise it on other produce seems questionable. Mealie-growers do not appear satisfied with the present tariff, which seems—if I understand aright—to be an attempt to do away with the natural advantages which those nearer the seaport have. I may here state that the railway rates are so excessive on some articles that thousands of tons of produce are rotting on the field, which, but for East Coast Fever, would have been sent to market by ox wagon. In one case I know of the enormous rate of 1s. 6d. per ton per mile has been charged on Colonial produce.

With all the advantages given, the export of maize has only reached one half of the million muids anticipated. The price realised has been good, something over eight shillings per muid. This price can scarcely be looked for in the future, it being obtained through the failure of the maize crops in other lands. The increased consumption of maize for feeding and other purposes may lead us to hope that the price will never again fall to what it was some years ago; probably we may look for about seven shillings as the price we will realise for future shipments. Whether we can not do better by feeding stock than selling at that price is a question that deserves serious consideration.

## SUGAR.

Last year's crop turned out well and prices were good. The growing cane promises well for the coming season, and I understand the acreage under crop is in excess of any former year. I trust we will have a record crop. Should the agitation in favour of discontinuing the importation of Indian labour succeed, so far as my observation goes, this industry must come to an end.

## WATTLE BARK.

The export of wattle bark has increased from 14,700 tons in 1906 to 23,700 in 1907. As a portion of 1906 crop had to be left over through want of rain, this increase is not quite so great as it appears to be. The increase in value from Customs returns is stated to be an increase from £89,000 to £136,000. Why bark should be valued higher in 1906 than 1907 I cannot understand, as the local market price was from £1 to £1 10s. per ton less. The greater portion of our plantations have not yet reached maturity, so we may look forward to a large increase in the output. It may be well to draw attention to an error into which some people have fallen, and in taking shares in wattle syndicates have based their calculations on the same. It is this:—That in the *Agricultural Journal* for September, 1907, 4 tons 14 cwt. is given as the average crop. Now this has been understood as the annual crop, while it is the return for something between seven and nine years. I have given the matter a good deal of consideration and made wide enquiries, and I believe 10 cwt. to be an average annual return per acre. I am sorry to see our bark quoted £2 per ton below Australian in the Home market reports. I can only account for this by the fact that a quantity of blue bark has recently been shipped from Natal, and also I fear some badly cured bark. I trust the Wattle Growers' Union will look into this, as well as push forward experiments in regard to shipping in the form of an extract. In regard to the future of wattle bark in Natal. I may say that our production is as yet a small part of the world's supply, but with the breadth sown, which I estimate at nearly 200,000 acres, Natal will soon be one of the principal producers of tanning matter. The price will depend very much on the production of other countries. Some of the plants which give tannic acid are, I understand, uncertain croppers, so that we may look forward to fluctuations in price, over which we have no control.

## COTTON.

I am sorry to say that late rains caused considerable loss in last year's crop. What was reaped brought up to 9½d. per lb. This year's crop is very promising and I hope may surpass the most sanguine estimates both in quantity and quality.

## FIBRE.

This seems still to be in the experimental stage. An interesting

article on this product appears in the March number of the *Agricultural Journal*.

#### RUBBER.

A small shipment has been made from Northern Zululand, and an attempt is being made to grow it there. Whether a profitable industry will be established or not it is impossible to say.

#### FRUIT INDUSTRY.

Fresh fruit to the value of over £122,000 was exported from the Colony during 1907, I fear in some cases with little or no profit to the senders. Arrangements are being made, I understand, for grading, packing and shipping under Government auspices. I hope this may be successful, and that a paying industry may be built up.

#### TEA.

The consumption of tea in South Africa is about six million lbs. per annum. Natal's output is about two million lbs., so that we would have expected the whole to have been consumed locally: such, however, is not the case. Even with a protective duty, an outlet for Natal tea has to be sought in the London market. Owing to a number of Ceylon tea plantations having been turned into rubber plantations, I am told that there is a good opening for Natal tea if it is supplied in sufficient quantity. This industry, like sugar, depends on Indian labour, and, should that cease, this industry ceases with it.

#### PASPALUM DILATATUM.

This grass is establishing itself as first favourite. In the division in which I live it is being largely cultivated. I would advise all farmers to try it. Seed can be obtained at a shilling per lb.; a single pound will in a few years give enough seed to cover a farm. Like most other plants it thrives best on rich soil, but even on poor soil gives a fair crop, especially with a good supply of moisture. Cattle and horses when accustomed to it prefer it to most grasses.

#### EAST COAST FEVER.

I need scarcely remind you of the present state of the Colony in regard to this disease. You all know that, in spite of the expenditure of nearly a quarter of a million, matters are worse than ever. Notwithstanding all that has been done, the disease spreads apace, so much so that we were told a fortnight ago by the Principal Veterinary Surgeon that we then had one hundred thousand head of infected and in-contact cattle. What then are we to do? Give up the fight in despair? No, let us be up and doing; fight this disease step by step, county by county, district by district, and, if possible, save *some* of our cattle. What steps then must we take to do this? I can give no better advice than that given to the

Government on the 26th of last month. Let me recapitulate what that advice was, as I fear it was not fully understood by all. 1st, The division of the Colony into districts with Advisory Boards, to whom very large powers are to be given. 2nd, That stamping out, except in special cases, should cease; and, when carried out, that it should be done immediately and thoroughly. 3rd, The compulsory cleansing of stock from ticks.

Why have the steps taken in the past failed? Because there has been no thoroughness in carrying out what has been determined on; also, I am sorry to say, because unprincipled men have broken the laws, and have moved cattle when it was difficult, if not impossible, to detect them. This, I fear, has been done by white men as well as by natives.

Now, dark as the outlook is for some of us, we must not despond. Many of us have already faced and overcome similar visitations; then let us, while doing our utmost to save our cattle, also turn our attention to whatever we can find to help us through this time of distress. Let us always remember that "every cloud has a silver lining."

#### EXPERIMENTAL FARMS.

I regret that during the year I have not been able to visit any of these except the Cedara. Considering the difficulties and drawbacks, I was satisfied with what I saw there. One thing I was specially pleased with was the condition of the cattle. A number of shorthorn cows give promise of forming a valuable stud-herd. Some change, however, must be made in the system of financing if that hope is to be realised. It will scarcely be believed that, under the present system, it is impossible to sell the old sire and buy a young one. The sale of the one may be made, but, as the price must go into the Treasury, another cannot be bought without a special vote of Parliament. Such a mode of procedure makes stock-farming hopeless. At Cedara I saw a young pine forest of 700 acres, which, if as successful as is anticipated, will bring into the Treasury enough to cover the whole expenses of the place. In this connection I cannot refrain from expressing my opinion that a great mistake was made in retrenching our able Director of Forests, Mr. Sim, who was doing valuable work for the Colony. The following supplied by the Director of Agricultural Experiments will give you a fair idea of what is going on:—

"The past year has been largely devoted to the work of re-organising the Experiment Farms and Forest Department upon lines calculated to effect considerable economies in current expenditure without undue loss of efficiency. This is to be regarded as a temporary expedient bearing relationship to the present financial situation. As an immediate result the amalgamated Farms, Forest and Dairy Votes have been reduced from £20,471 expended 1906-7 to £10,800, the total estimated expenditure on all branches of the work during the forthcoming financial year. Against the latter figures is to be placed a visible revenue of £5,600, being a



further increase of £2,600 on a revenue of £3,000 secured by the Farms during the current year.

"Forest revenues have suffered severely from the general cessation of sawing operations occasioned by transport difficulties and Native unrest. By the continued exercise of rigid economy it is hoped to render this branch of the Agricultural Department self-supporting within two years, when wattle and sugar plantations, orchards, dairy, herd and other classes of stock will become productive sources of revenue.

"In common with that of the farming community, the work of the Farms has been severely handicapped by the withdrawal of the staff and students for military service during the planting months. In spite of this, however, a larger acreage than before has been brought under cultivation, both at Cedara and Winkel Spruit, including 250 acres of maize at the former centre, which is undoubtedly the best crop yet raised on the Farm, and 120 acres of sugar at the Coast.

"Valuable data have been secured during the past season from experiments with maize, wheat, barley, oats, bulrush, millet, rye, lucerne, rice, sugar cane, sugar beet, tobacco, ground nuts, onions, castor-oil, coffee, cotton, pineapples, fibre crops and rhubarb, while the live stock industry has been represented by winter feeding experiments with dairy cows, the introduction of woolled and haired Persian sheep, the paddock feeding of pigs, and the establishment of a model poultry farm.

"A point has been made of publishing information secured through the medium of the *Agricultural Journal*, in the absence of any possibility of issuing an exhaustive annual report.

"The scope of the School of Agriculture has been increased by the establishment of branch schools at Winkel Spruit and Weenen, where students complete a second year's course in tropical agriculture and irrigation. The limit of accommodation was reached at the beginning of the year, and further applications had to be refused. A regrettable interruption to the educational work was occasioned by an outbreak of enteric fever at Cedara. This trouble is, however, now at an end, and twenty-seven students are again in residence. I am glad to report that the training received has been the means of securing remunerative employment to all students desiring same at the conclusion of their course."

Mr. Watkins-Pitchford, Government Bacteriologist, sends the following:—

"During the past year I am glad to be able to tell you—though our resources of men and money have been very slender considering the large fields of work we are trying to cover—that substantial progress has been made in, I think, all lines of work we have been taking up.

"Being particularly urged to try and push the question of a blue

tongue vaccine to a satisfactory conclusion, much time and thought—perhaps a disproportionate amount—has been given to this subject. I am pleased to be able to tell you that the sheep farmer now has at his disposal a preventative vaccine against this disease of sheep, which has given the best results in its practical testing. Although I have tried to break down the immunity conferred by this vaccine, I have not so far lost a single inoculated sheep, in spite (after clipping) of exposure in the worst blue tongue locality I could secure; so that I am feeling sanguine that in this vaccine we have a useful preparation which will not reduce the condition of the sheep or cause lameness or loss of wool, both of which points caused some delay in arranging. The method of production of this vaccine differs essentially from any other preparation of a similar nature.

“In the disease of calves, to which attention has so often been directed in the past, I am also pleased to be able to report substantial progress. Through the kindness of the Hon. Joseph Baynes, the measures which have been devised for the prevention of this disease are receiving a thorough testing. I have only to tell you that these trials of immunity are being carried out by Mr. G. D. Alexander for you to understand how carefully and exhaustively they will be carried out. Up to the present results are most promising.

“Horsesickness, again—which has baffled us so long in the past—is yielding gradually to our efforts to produce a serviceable immunity, and I am able to tell you that we can produce a mild attack of horsesickness at will, with very slight danger to the inoculated animal. I am now endeavouring, not, I think, without prospect of success, to convert the immunity which follows this slight attack into a resistance to natural infection. On this point, however, I do not wish to speak confidently, as the difficulties are great, but am sure you will be as satisfied as I am to know that the progress made in this direction, as in others mentioned, is both encouraging and substantial.

“A glance at my annual report in last month’s *Agricultural Journal* will show you how the routine work of my department—in spite of bad times—has *more than doubled itself* within the past year, so that you will understand we have many irons in the fire, and it is a matter of no small difficulty, with our limited resources, to keep them all properly heated.

“While one stock owner considers the question of sheep diseases of the first importance, another will argue that horsesickness should absorb every effort, while, again, another would like to see the destructive disease of calves given preference. It has even been seriously suggested to me lately that I should “drop everything” and give all my attention to cattle dipping and cattle dips, so you see I often find myself confronted with conflicting opinions, and am tempted to divert

into *many* channels the efforts and faculties which are not more than sufficient for *one* particular line of enquiry. The definitely-expressed wish of your Union, however, has been a help to me in the past in deciding—when in doubt—where the preference should be given, and any such expression of wish will always be both helpful and welcome.”

Mr. Claude Fuller, Government Entomologist, reports:—

“First, as regards locusts. During the spring, we not only had in Natal and Zululand a number of swarms which had hibernated somewhere about 2,000 feet above the sea level, but also a fairly considerable invasion of the same from beyond our territories.

“Throughout the Colony eggs were plentifully deposited, and it seemed to me that we were standing in for a very heavy hopper season. In fact, I estimated that I should require between twenty and thirty tons of arsenite of soda and quite £5,000 to deal with the hoppers in locations and native territories.

“Fortunately the eggs were destroyed in myriads, and quite a small proportion of laying came to anything. The destruction of the eggs has been generally attributed to the rains, but, whilst the eggs are often destroyed in batches, when deposited in low lands, by rain, I prefer to credit the appearance of fly-parasites with the egg destruction rather than the rains. I may say that I have never seen such an abundance of these parasites since I have been in the Colony.

“Owing to the small amount—£2,000—voted by Parliament for the special service of locust destruction, I was not able to conduct as extensive a campaign as I should have liked to do. However, very good work was done, particularly in the Eshowe, Umlalazi, Mapumulo, Umlazi, Umzinto, and Lower Umzinkulu Divisions. In view of the fact that locusts laid their eggs much earlier this year than ever before, and came to the winged state in February, the effect of clearing large areas such as Eshowe, Umlalazi, and Mapumulo has been of most material benefit to farmers in the Colony.

“The locust campaigns have been conducted upon a most elaborate scale in the neighbouring Colonies, the Cape Colony, Orange River Colony, and Transvaal Governments expending between them somewhere about £30,000 in the destruction of hoppers by means of the Natal locust poison.

“Of particular interest has been the recrudescence this year of armyworms in the Colony. They have not accomplished extensive mischief, however. These creatures were abundant throughout South Africa exactly 30 years ago, and disappeared altogether in the interval. I found that between 60 per cent. and 70 per cent. of the caterpillars were parasitised, and have no hesitation in saying that nature has got this pest well under control.

“The mealie grub has accomplished a great deal of damage in cer-

tain parts, and more particularly in the Orange River Colony and Transvaal. It is impossible to account for the excessive abundance of the pest in particular localities and equally difficult to say why it put in a later appearance than is usually the case.

"A proposal has been made to me as to the efficiency of mowing off young mealies after the moth has attacked them, and some investigation as to the feasibility of this scheme has already been made. Anything of this kind must, if the mealies are to spring again, be done whilst the stalk is still hollow—in other words, before the growing apex of the plant has "shot." So far as I can say at present, this seems safe whilst the plant is seven to eight inches high, but there is a very narrow margin of time after that period, because in my late plantings I found the tassels formed at a foot from the ground, when the plants were a month old, and I believe they would form in ten to fourteen days early in the season.

"There can be no doubt whatever as to the efficacy of hoeing out all plants showing attack of the grub early in the season, as large quantities of the eggs are laid on one plant and the caterpillars migrate from the egg centres to other plants. Again, the planting of an early trap crop of mealies for the moths to lay their eggs upon before the main crop is up has been proved most beneficial and practicable by many of my correspondents.

"The ploughing under or harrowing out of old stumps any time before the middle of August so as to destroy the wintering grubs they contain, is an equally beneficial and effective method of control, and has now many advocates apart from myself.

"I feel confident that if all would adopt these methods or some modification of them as regards mealies, amabele and imfe, this pest would be well under control, especially if farmers saw to it that their native tenants took the same measures.

"Although giving excellent results in the hands of some, I cannot bring myself to believe that the pouring of poison into the cups of the young mealie plants is an economic proposition.

"Dipping experiments are now receiving attention, and a start will very shortly be made. I am fortunate in being able to inform you that Mr. Pitchford will collaborate in this work.

"At present the matter of citrus export is engaging most of my attention. It is very difficult to arrive at a clear appreciation of last season's shipments. These were sent to England both by cool storage and ventilated holds, and the fruit travelling under the latter condition seems to have deteriorated considerably.

"Again, every sender shipped under his own mark, and it is very apparent to me that none of the growers understood what grading and sizing of fruit really meant. After considering the matter in its various



details, I am forced to the conclusion that apart from deterioration due to the method of carriage and in no small measure to faulty packing, the varying prices realised were mainly due to the want of uniformity.

"The Department is now striving to overcome this by the establishment of a Central Packing House adjacent to the railway terminus and the mail steamer berth at the Point, Durban. Here the fruit after being cured will be taken in hand and properly graded, sized and packed under my personal supervision. It is trusting that by putting a uniform article as regards grades, and by good packing, to secure a uniform and paying price for our naartjes. It is not expected that the present season's shipments will be of any great magnitude, but they will be treated with as much attention as if they were. I am sanguine that as the result we will firmly establish the naartje upon the London market.

"I trust that but few oranges will be sent, because we have not a sufficient supply as yet of the desired sorts to make it worth while. It must be realised, apart from any patriotic admiration of the Natal orange, that the London market looks upon it with disfavour, and prefers a more or less seedless orange, such as Washington Navel and Jaffa.

"Two points which citrus fruit growers must give immediate attention to are the propagation of such oranges as are favoured by the London market, and scientific manuring of the orange orchard.

"I may add that it is open to anyone to send naartjes to the Central Packing House for export, so long as they subscribe to the regulations."

#### SHIPPING RING.

A matter intimately connected with farming is that of getting produce to market at a reasonable rate; this, I think, brings the subject of the Shipping Ring within the sphere of matters which we have a right to discuss at a meeting of this Union. A committee of a Royal Commission appointed to investigate into shipping matters has held sittings in South Africa since we last met. I see Sir Donald Currie says that the only objectors to the Shipping Ring in Natal were an editor, a lawyer and a clergyman. He omits to say that those gentlemen voiced the principal producers and consumers in Natal. I would like to draw the attention of those who may be influenced by Sir Donald Currie's statement to the fact that at a meeting of the Inter-Colonial Agricultural Union, held in Pretoria, October, 1907, where representatives of the farming interests of Cape Colony, Transvaal, Orange River Colony, Rhodesia and Natal were met in Council, the following resolution was unanimously carried:—

"This Union considers that the agricultural development of South Africa has been retarded by the formation of the Shipping Ring, which

now dominates South African trade. The system of 'deferred rebates' is used to maintain a monopoly in freights on a higher level than would be the case were there an open freight market. Therefore, this Union trusts that the several Governments of South Africa, acting in conjunction with the Imperial Government, will take steps to make 'deferred rebates,' or any similar device, illegal; and thus restore a beneficial competition in the carrying trade between Great Britain and South Africa."

This sufficiently shows the feeling of the farmers of South Africa in regard to the Shipping Ring.

#### THE MILITIA LAW.

In my address to you last year—in answer to some foolish statements which had been published about settling men *without* capital or experience on small areas—I drew attention to some of the drawbacks which farmers have to contend with. Some of you thought it rather out of place in your President to emphasise these drawbacks, which, of course, have to some extent counterparts in other countries. I will not to-day touch upon any of the obstacles which are natural to the country, but upon one which we have brought upon ourselves, and which, in my opinion, is one of the greatest drawbacks in Natal for the farmer to contend with. I refer to the Militia Law. Under this law farmers are dragged away from their farms at any season of the year. As this is a political question in many of its aspects, I will strictly confine myself to its effects upon agriculture. First, it has driven away hundreds of farmers *from* Natal, and I believe has kept hundreds of farmers from coming *to* Natal. I need not enlarge upon what that means to a country crying out for a European agricultural population. I have tried to estimate what this law has indirectly cost the farmer during the past year. I believe that fully one thousand farmers were called from their farms at the very busiest season. I believe I am far within the truth when I estimate the indirect loss to each of these at two hundred, so that we have a loss to the wealth of the farming community of over £200,000 by the expedition of 1907. I may be asked how I estimate this loss. I acknowledge there is a difficulty. I have observed the loss in my immediate neighbourhood, and feel sure the same losses have taken place elsewhere. This loss have been caused by crops not being put in at the right time. We all know that many crops, maize in particular, must be sown almost to a day, if it is to succeed. I need not dwell upon the small amount and bad quality of work done in the absence of the master. Nor need I enlarge on the utter ruin of all experiments which are in progress, and the vexation caused thereby. The mischief done by stock not being properly cared for, stallions, bulls, rams not being put to use at proper times, or

else allowed a free run when they should be shut up. Such things, which appeal to farmers, will, if considered, lead you to see that I have rather under, than over-estimated, the loss to the farming community. Whether the necessary defence of the Colony could be safely carried on in another and cheaper way is not a subject for me to discuss here; at a proper time I am quite ready to show that it could be done cheaper and better in other ways. I will conclude my remarks on this subject with a quotation from an article in *South Africa*, referring to the recent expedition to Zululand: "It means ruin to some of the young farmers. They have had to wait for rain before they could plough, and now they have got the land ploughed, and nothing planted, they have been obliged to go and leave it."

#### INTER-COLONIAL UNION.

The third annual meeting of this Union was held in Pretoria, opening on September 30th. A representative gathering from all parts of South Africa were present, and for the first time Portuguese Territory was also represented. Natal was well to the fore, eleven delegates being present. Copies of the minutes are laid on the table for the use of members. The delegates were received and addressed by the Hon. J. C. Smuts, Colonial Secretary—General Botha being prevented by indisposition from being present—and by the Mayor of Pretoria. The delegates were most hospitably entertained, and taken over the Potchefstroom Experimental Farm, the Laboratory and the experimental plots near Pretoria. Through the courtesy of Mr. Cullinan, one day was spent on the Premier Diamond Mine, and another, at the invitation of Sir George Farrar, on the East Rand Gold Mines, at each of which we were sumptuously entertained, and shown the process of both diamond and gold mining. It has not been decided where the Union meets this year. Failing an invitation from Bloemfontein, it meets in Pietermaritzburg. It falls to you to appoint delegates to that meeting, and, should it be held in Pietermaritzburg, your incoming committee will require to consider arrangements.

In conclusion, I desire to give my best thanks to the members of committee for the assistance they have given during the past year; also to all members for their courtesy and help. In regard to our Secretary, Mr. Eadie, he has as usual done everything in his power to forward the interests of the Union. (Applause.)

Mr. Johnstone moved the adoption of the President's report, which was carried.

On account of the replies of the Government to the previous Conference's resolutions not having been received up to that time from the printers, it was resolved, after considerable discussion, to pass on to the new resolutions appearing on the agenda paper.



## EAST COAST FEVER.

Nineteen motions appeared on the agenda paper on the subject of East Coast Fever. The first of these, put forward by the Lower Umzimkulu Agricultural Association, read as follows:—"That, in the opinion of this Union, it is desirable that East Coast Fever committees be given some amount of executive power within their own districts, and that they be authorised to call upon the police to destroy cattle and arrest their drivers, should they deem it necessary in checking the disease."

In submitting this resolution, Mr. Mitchell asked what the Government intended doing with regard to the resolutions of the East Coast Fever Conference held in March. He asked if Mr. Power would explain the position.

Mr. Power (Veterinary Officer, Headquarters) replied that the resolutions passed at the Conference in question had been considered. The Colony had been mapped out afresh and certain proposals had been submitted to the various Advisory Boards throughout the Colony for expressions of opinion.

Mr. Mitchell asked what the mode of procedure was to be if cattle from an infected area entered a clean area.

Mr. Power explained that cattle could only be destroyed by order of the Principal Veterinary Surgeon and the District Veterinary Surgeons, except in the case of cattle straying on private lands, when they might be destroyed up to five in number. The police had no power whatever to destroy cattle.

Mr. Mitchell then withdrew his resolution.

Two other motions, to have been brought forward by the Nottingham Road Farmers' Association and Noodsberg Road Agricultural Society respectively, and having reference to the movement of cattle without the consent of Advisory Board, were also withdrawn.

## MOVEMENT OF CATTLE.

Mr. Blaker then moved, on behalf of the Mooi River Farmers' Association: "That the movement of all cattle from infected areas through non-infected country should be stopped."

Mr. Bester was in favour of all movements of cattle being stopped, which he was of opinion was the only way of dealing with the disease. He accordingly moved, as an amendment, that all movement of cattle in the Colony be stopped for twelve months.

Mr. Johnstone, speaking against the amendment, pointed out that not more than half of the cattle in the Colony were infected, and he asked why owners of clean cattle should have to suffer through not being able to send their produce to the railway. Mr. Bester's suggestion, if acted upon, would mean ruination to half the residents of



the upper parts of the Colony. He knew cases where cattle had not been moved for two years and yet tick fever existed on the farms on which they were running, in spite of the fact, too, that the farms were properly fenced.

Mr. Campbell considered that the movement of natives ought first to be controlled, as this was often a means whereby ticks were carried from one part of the Colony to another. He knew of cutbreaks which had occurred in districts to which cattle had not been moved, and the only conclusion he could arrive at was that the natives carried the ticks.

Mr. Hancock thought that if one district were to consent to the stoppage of cattle others would fall into line. He moved as a further amendment "that the stoppage of movements of cattle should be left in the hands of the Advisory Boards of the different districts."

Mr. Illing also favoured the stoppage of all movements of cattle. Everything else had been tried and failed, and this was the last resource.

Another delegate said that it would be almost impossible to stop the movement of cattle entirely. The natives were practically all stock-owners, and they would soon find means of smuggling their cattle from one district to another. He thought the matter could safely be left in the hands of the Advisory Boards.

Upon the original resolution and the amendments being put to the vote, Mr. Hancock's amendment was carried.

Mr. W. L. Stead considered that the Minister of Agriculture should be invited to attend the meeting and tell them which of the resolutions on the agenda paper the Government intended to follow, in order that they might know what to discuss.

After some discussion it was resolved that the Minister of Agriculture be invited to be present at the discussion of the resolutions *re* East Coast Fever. It was decided to proceed with resolutions on other matters pending the Minister's arrival.

#### POLICE SUBSTITUTES.

Col. Rethman accordingly moved, on behalf of the Lower Umzimkulu Agricultural Society: "That this Union, while agreeing with the policy of the Government in reducing police strength in outlying districts where found necessary, as a measure of either retrenchment, or of public policy, considers some substitutes should certainly be appointed, and that any difficulty might be overcome by giving Justices of the Peace and native chiefs summary powers in cases of petty offences."

Mr. Dukes said he would be inclined to support the motion if that portion of it advocating the granting of power to native chiefs were rescinded, and he moved an amendment deleting the words "and native chiefs."

This amendment was supported by several delegates.

Mr. Mitchell remarked that there appeared to be extensive retrenchment of police in view and that accordingly the Government should introduce some scheme to make chiefs responsible for the prevalence of order in their respective districts and be given the necessary power.

Mr. Dick did not think that assembly would ever pass such a resolution, so far as native chiefs were concerned. As regards Justices of the Peace, he did not think they could reasonably expect J.F.'s to try cases every day in the week for nothing.

Mr. Johnstone pointed out that if the resolution were ever given effect to it would mean that native chiefs would be allowed to try Europeans for petty offences, a position that could not be tolerated for a moment. As regards Justices of the Peace, he was of the opinion that they might be made more use of.

Col. Addison showed that if such power as was proposed were given to Justices of the Peace, it would mean that interpreters and clerks would be required, and the system would be more costly in the end.

Mr. Hancock took exception to the words "while agreeing with the policy of the Government in reducing police strength in outlying districts." He moved the following amendment: "That this Union is strongly of the opinion that no further reduction of the Natal Police should be made in the outstations throughout the Colony.

This amendment was carried.

#### RAILWAY MATTERS.

##### C.O.D. RATES.

Mr. Mitchell moved, on behalf of the Lower Umzimkulu Farmers' Association: "That the minimum rate for C.O.D. consignments on the N.G.R. should be reduced."

Speaking to the motion, Mr. Mitchell said that since the resolution had been sent in, the Government had introduced a new parcel post for Natal produce. He felt that the Union had the right to ask for a similar concession in regard to C.O.D. rates. He held that a reduction in the rates would not mean a material loss to the Government, as more would make use of the C.O.D. system were the rates lowered.

Mr. Downing also spoke in favour of the motion. He showed that it was cheaper to send large consignments by rail than small ones, and that the "small" farmer was unable to send his single boxes of fruit and other produce.

The motion was carried.

##### RATES ON PRODUCE.

Mr. Oldacre moved on behalf of the Upper Biggarsberg Farmers' Association: "Seeing that the rate for conveyance of mealies from

stations in the Transvaal to Durban has been reduced to 10s. per ton for 20 ton truck loads, that this Union is of opinion that Natal should receive a similar concession, and that Natal produce should be conveyed to Transvaal stations at the same rate."

Mr. Moen seconded the motion, and allowed the following resolution, standing in the name of his (Camperdown Division Farmers') Association, to be combined with that of the Upper Biggarsberg Farmers' Association: "That, in the opinion of this Union, the new rate for mealies for export is not fair, in that the railway charge Camperdown District 10s. per ton and the Transvaal only 5s. 7d. per ton."

Mr. King, representing the Nottingham Road Farmers' Association, suggested that the resolution to be introduced by his Association be dealt with in the same manner. This was agreed to. The motion of the Nottingham Road Association was as follows: "That this Union is of opinion that the existing rates for agricultural produce on the N.G.R. are excessive, and that a substantial reduction should be made to bring the Colony into line with the C.S.A.R."

Mr. George Hulett deprecated the passing of any resolutions advising the Government to increase the rates on mealies, as the carrying of the Transvaal's grain meant more work for the railway and Port. He quoted the reduction of the coal rate in support of his argument. He considered that they should eliminate all reference to the Transvaal and merely ask for such rates in Natal as will enable our mealies to be profitably exported.

Mr. King said that nearly the whole of our railway traffic was down-country and not up-country, and every non-paying truck-load of stuff carried up the railway was simply a tax on Natal. Their neighbours had in every possible way raised the rates on Natal produce carried over their lines.

Col. Leuchars found himself in accord with the resolution of the Camperdown Farmers' Association, but he considered that the Upper Biggarsberg Association were asking for too much. He objected to Transvaal produce being carried at the expense of the Natal farmers. It had the effect of sending farmers from Natal to the Transvaal. A man at Camperdown had to pay more for his land than the Transvaaler, and yet got his mealies carried no cheaper than those of the Transvaal farmer.

Mr. Henwood did not see the justice of carrying the Transvaal's mealies at a loss. It was a matter of sentiment, and it was time sentiment was dropped. Natal had pandered too long to the Transvaal and O.R.C. If we carried their stuff at a loss, they should carry ours at a loss. If our railway does not pay, who would be taxed? The Natal farmer—not the Transvaaler.

In voting it was decided to take the motions separately. Each of

the three detailed above, on being put to the meeting, was passed—the first and third by a large majority, and the second unanimously.

Mr. Dick moved on behalf of the Royal Agricultural Society of Natal: "That this Union is of opinion that all Colonial produce should be carried on the railway at a fixed rate per ton per mile."

Speaking to the motion, Mr. Dick said that the resolution would do away with the constant bickering with the railway department. The present conditions were detrimental to all the intermediate stations in Natal, and the effect of the differential rate had been to handicap Maritzburg and Estcourt to such an extent that the grain trade had become almost impossible. It would be fair to all classes of the community. Durban had profited by the differential rate to such an extent that it had frozen out all competitors. He considered that the man who had bought land cheaply away from the railway was, by the differential rate, on as good a footing as the man who had bought land near the railway at a high price, and he did not think this was fair.

Mr. Hosking seconded the motion.

Mr. Angus Wood spoke against the resolution. He considered that a differentiation of rates would severely tax the farmers in the Northern districts, as they were debarred from the Transvaal markets and had to seek their markets in Natal.

A delegate asked if Mr. Dick proposed to charge the same rate for all classes of produce, irrespective of their market value?

Mr. Hulett was in favour of the zone system, which would prevent excessive rates being charged people in the outlying districts, where the cost of living was often greater than in the more central portions of the Colony.

Mr. Dukes then moved as an amendment: "That this Union is of the opinion that all Colonial produce should be carried at the zone-cum-class rates."

The mover said that it did not follow that all the various classes of produce should be carried at the same rate, irrespective of their value, nor was that the intention. Coal was carried at a mileage rate: why could not mealies, bark, and anything else be carried at mileage rates? There would, of course, be a minimum rate.

Mr. Dukes' amendment, on being put to the meeting, was lost, and the original motion was carried.

#### EXPORTATION AT SHIPPER'S RISK.

Mr. H. Blaker, on behalf of the Mooi River Farmers' Association, moved: "That the exportation of all mealies be allowed by Government at the shipper's risk, and at the reduced rate."

He thought that such a course would encourage trade and would mean the exportation of larger quantities of mealies to London. He



said that in London various qualities of grain are sold according to their uses. We should not get a bad name if we exported our "seconds" and "thirds" as such; and in the case of grossly inferior mealies being exported, it would be the shipper and not the Colony that would be stigmatised.

Mr. Johnstone said that Natal mealies realised a good price on the London market on account of the Government brand, which was a guarantee of good quality. He further pointed out that if there were no Government supervision mealies that had not even been grown in Natal might be exported and damage the reputation of the proper Natal product. He was strongly in favour of the system of Government inspection and stamping being continued.

Mr. Moon also spoke strongly against the resolution. Not only should we have a grader at the Point, but we should also have one at Volksrust, for mealies coming from the Transvaal.

The motion was rejected.

#### EAST COAST FEVER.

At the evening sitting of the first day, Mr. Deane, Minister of Agriculture, was present, in response to the invitation of the Conference, to explain the position of East Coast Fever.

Addressing the meeting, Mr. Deane said he took it for granted that each delegate had read the resolutions which had been passed at the East Coast Fever Conference held in March. Proceeding, he said that the Government intended to give effect to those resolutions as far as possible. One important resolution was to the effect that every district should, if possible, have access to the railway. What the Government had done in the meantime, was to send to every district a full description of its new boundaries. Where Magisterial Divisions remained intact, there would be no need to have any re-election of the Advisory Board, unless found desirable, but in other cases such re-elections would be necessary. The Government, however, had no desire to force these boundaries upon any particular district, but rather desired expressions of satisfaction or otherwise. In the election of the new Advisory Boards the Government was not going to accept the name of any man who was a cattle buyer. The duties of the Advisory Committees would be to direct the compulsory cleansing of cattle, which was to be applied all over the Colony. They would also have power to order the branding of cattle in each district, and have full control over the movement of cattle. Permits for moving cattle would have to be obtained in future from Advisory Boards, not from the Government. If the Advisory Board refused the permit, there could be no recourse to Government. The Advisory Boards would also nominate the man who would temperature the cattle, and would be required

to see that the buyer of cattle guaranteed the payment of this man. It would further be necessary for the Advisory Boards to direct the route by which cattle would travel to the railway station, and it would be necessary to obtain a permit from the Principal Veterinary Surgeon to forward the cattle to their destination.

The Government were now offering every facility to those who wished to dispose of their cattle to do so. They were inviting buyers to come and purchase meat at so much per pound, and he was pleased to see there was now a prospect of obtaining a better price than was anticipated a fortnight ago from the person the Government was negotiating with.

Mr. Deane then turned to the position of East Coast Fever in the Colony at the present time. It had been stated, he continued, that 100,000 head of cattle were in contact, but nine-tenths of these belonged to natives. The Government had now completed the fencing off of locations. From the Umkomaas right away to the Tugela, including the Indwedwe and Mapumulo districts were doomed. In these unfenced districts, it was only a matter of time before all cattle would be destroyed by the disease, and the whole of Zululand was in the same position. In the Edendale outbreak there were 500 head of cattle, and stamping out commenced last Saturday (11th).

The Government was now forming a zone a mile wide, and natives who did not respect it would be dealt with under the East Coast Fever Act. There was an outbreak two months ago south of the Umkomaas River, in the Alexandra County. This had been stamped out and the land fenced, and there had been no further disease there. With the creation of the zone there, he felt certain the disease would not extend any further south.

Near the main line, travelling up to the Tugela River, the whole country was more or less infected, and the Government had withdrawn the guards from there. Further north they had an outbreak which had been stamped out. In this district and at Zwaartkop substantial fences would be erected.

Whatever money they spent and whatever methods they adopted all would be futile unless they stopped the movement of cattle. (Hear, hear.) The winter was approaching now and they had only two serious outbreaks in Natal proper excluding the native locations which he had already mentioned. The one was in Muden district and the other in the Dundee district. If they were to succeed in checking the spread of the disease they must be careful to fence their farms in conjunction with stopping the movement of cattle. Although they were going to apply compulsory cleansing of cattle once the disease got on their land, he was afraid that would be of little value. But if they undertook absolutely to stop the movement of cattle the chances were a

hundred to one that they would stop the disease. Their principal difficulty would be in getting the produce to the railway stations, but to a limited extent the Government were prepared to help them in that direction with mule transport.

A number of questions were then addressed to the Minister by various delegates.

Mr. Henwood asked if the Government would allow any resolutions passed by the Union, which were antagonistic to the resolutions passed at the East Coast Fever Conference of March, to supersede the latter?

Mr. Deane replied that the Government were bound to give consideration to the resolutions passed at the March Conference, and, consequently, could not take into consideration any antagonistic resolutions passed by the Union.

#### PUBLIC ROADS.

The Gourton Farmers' Association delegate moved: "That the attention of the Government be drawn to the bad state of the public roads of the Colony due to recent retrenchment in the Public Works Department, and this Conference suggests that road repairing should be let out to 'short length' contracts, as in the O.R.C."

Mr. Barnes, the Chief Engineer, P.W.D., was present by arrangement, and was asked to address the Conference upon the question of roads. Before doing this, however, Mr. Deane took the opportunity of stating that both he himself and the Prime Minister had made a mis-statement with regard to the expenditure in the vote of £100,000 for road-making. They had stated that one-third went in pick and shovel work and the remaining two-thirds in administration. In justice to Mr. Barnes he would like to point out that the fractions should be reversed in their application.

Mr. Barnes then addressed the meeting. He stated that the cost of road-work in Natal compared very favourably with any other country in the world. If there was a preponderance of blacks over the whites, road-making was one of the things that benefited, by means of the cheapness of labour. He remarked that in the United States the cost per mile of hardened road was £1,020, while in Natal the expense was just half that amount.

During the twenty years he had been in office, the expenditure on roads had been £1,369,000. For this sum the Colony had obtained 15,000 miles of hardened roads, as well as improvements which had cost £450,000, and bridges and culverts, and had incurred no debt for it. Everything was paid for. Notwithstanding the fact that the roads of the Colony had been standing still for a while, they were still in very fair order.

After a large number of questions had been put and answered, Mr.

Barnes suggested that the Conference should appoint a committee of four members to attend his office and go into all the matters to which allusion was being made in the questions. He was sure this would result in more real work being accomplished than by the unsatisfactory method of question and answer.

The suggestion was received with applause.

This concluded the first day's proceedings.

*(To be continued.)*

---

## **A New Bacon Factory.**

---

### **THE NEL'S RUST PROPOSITION.**

---

ANOTHER attempt is now being made to establish a ham and bacon factory in Natal—this time at Nel's Rust. It is announced that the name of the new company will be the "Nel's Rust Bacon Factory, Ltd.," and that it is to be launched with a capital of £8,000 in £1 shares. The capital is divided as follows:—To the Hon. Joseph Baynes, for purchase price of land, water rights, and machinery, £3,000 in shares and £500 in cash; alteration to buildings, additional buildings, machinery, and fittings, £2,000; flotation expenses, £200; and working capital, £2,300. There are 5,000 shares submitted to the public, on the following terms:—5s. on application, 5s. on allotment, 5s. three months after allotment, and 5s. six months after allotment. The provisional directors are the Hon. Joseph Baynes; Mr. George C. Mackenzie, Buccleugh, Albert Falls; and Mr. Thomas Stead, J.P., New Leeds. Mr. George D. Alexander, Meyer's Hoek, *via* Thornville Junction, is managing director, and the provisional secretaries are Messrs. Duff, Eladie & Co., Timber Street, Maritzburg.

Attempts have been made in the past to establish a bacon factory, but there have been good reasons for their want of success. Dairying had not been established in the country on any sound lines, and, as is well known, dairy farming and pig rearing go together. Again, farmers had not in those days interested themselves in the raising of suitable breeds of pigs, nor was there anything like the extent of land cultivated or the foods suitable for pig feeding available. Again, the appearance of and devastation caused by East Coast Fever have compelled many to turn their attention to other kinds of stock than cattle, and of these pigs give the quickest return. The establishment of a bacon factory will give the same stimulus



to pig breeding that the establishment of creameries has given to dairying, and will not only prove profitable to those who initiate and support it, but will also be of very great benefit to the Colony.

The bacon factory which it was recently proposed to establish at Umlazi Road was to be on the lines of a co-operative factory, and the scheme was based on support by the Government in the shape of a loan. The loan, however, was not forthcoming, and the original scheme has fallen through, but many of those interested in the scheme were so convinced of the potentialities that it was decided to approach Mr. Baynes, with a view to obtaining his support and co-operation in the establishment of a bacon factory, and to acquire the mill and buildings and adjoining land situate on the Nel's Rust Estate, near which the Richmond Road crosses the Umlazi. The result has been that Mr. Baynes has agreed to accept shares in the proposed company for the value of the land, buildings and machinery, and has only stipulated for payment of a sufficient sum to cover the erection of a cottage for his farm manager, who now lives in a cottage on the land to be acquired by the company—and, further, has promised his best interest and support in the interests of the company, and has agreed to join the provision board of directors.

The site it is proposed to acquire is situated a little over half a mile from Nel's Rust Station and within 200 yards of the main road between Thornville Junction and Richmond. It is on the Umlazi River, from which an inexhaustible supply of water can be obtained. The use of the water power will very largely reduce the working expenses of the factory, not only in saving of fuel and running expenses, but in the saving of the employment of a permanent engineer—which would be necessary if steam-driven plant was employed—and the advantage of this power adds greatly to the value of the property.

The land consists of about 54 acres of good irrigible land, at present leased and planted with mealies and other crops. The land will be very valuable for growing crops suitable for feeding pigs. Considering the power obtainable, the close proximity to the railway and main Richmond Road, and the feasibility of obtaining pigs by rail from all over the Colony, and the fact that the site is situated in one of the largest pig rearing districts, it would be extremely difficult to choose a more suitable situation, and it has been described by an expert as an ideal one for the purpose. The capacity of the factory will, it is stated, be such as to deal with all the pigs available for a considerable time to come, but in the arrangement of buildings the question of future extension will not be overlooked. It is expected that the number to commence with will be about 200 pigs per month, but it is fully expected that in a very short time the number of pigs available will be much increased when farmers find that there is a steady demand for pigs at a remunerative price and with certainty of payment.

## **Lucerne, Tobacco, and Paspalum.**

### EXPERIENCES AT WEENEN AND WINTERTON.

By A. H. BENNETT.

It should be interesting to the readers of the *Journal* to read the experiences of others in the growing of the various crops in the different districts, and I have succeeded in obtaining a few details, so far as Weenen and Winterton are concerned.

Lucerne has been five years justifying its planting. It was in 1903 that I planted a patch in some very close grey soil. It was liberally treated with about 400lbs. of special potato fertiliser to the acre, and planted in March, but would not "gee." The next March I planted some in a light chocolate soil, and, as I thought it may have been the want of shading, to which was due the non-success of the previous crop, I planted it mixed with barley seed; but although for a few months it did well, and I had a light cutting off the patch in the following December, it gradually sickened, the lower leaves turned yellow, and the plants died. I dug up several of the plants, and in getting down to the roots, I found they had struck a bed of ironstone, or, as it is termed in this district, *Qubane*. There is no doubt that this accounted for the dying down of the plants directly the roots came into contact with it. I was disappointed again, but luckily I saw in a publisher's list a book on lucerne, by Ccburn. I obtained this, and found recommended a deep light alluvial soil in which to plant this crop. I fortunately had a patch of such soil on the banks of the river, and the following March I planted again, in rows about a foot apart. The stand was fair, and in the following September I had a cutting, with further ones in November, January, and March, with a further growth of about six inches before the plants, feeling the cold weather, stopped growing.

The results being so good the first year, several of the Winterton settlers tried, the next year, to grow this crop, but in cases where the seed was planted in shallow soil, on the ridges or slopes, it has not done well, but when planted in the bottoms it will grow, and do well. I do not think it will ever do as well as that grown at the Weenen Settlement. There six and seven cuttings per year can be obtained, whereas five would be the average here at Winterton, but to a dairy farmer this crop would be a "bonanza." If cut in the afternoon and allowed to wilt for two or three hours it will not harm cows, and, fed

on it, they not only give more milk, but give the butter a special honey flavour of its own.

Mr. Joseph Pearse, of the Winterton Settlement, has about three acres of tobacco planted, and has some of the finest varieties, Turkish and Virginian leaf predominating. Mr. Pearse came to the Settlement with the intention of making a living by growing small crops, and, unfortunately, spent most of his time the first year in planting onions and potatoes. These crops were very expensive to grow, and the market for them when he reaped was very low. Fortunately he had a small acreage planted out with tobacco. This he cured and cut himself, and the now familiar J.P. brand of tobacco made its bow to public favour and criticism. It stood the latter test well, and at the present time until the new crop is ready, Winterton and district tobacco smokers have to make the best of things, and smoke Magaliesburg or other brands, having become wiser and ordered their year's supply ahead, instead of waiting until the local storekeepers have sold out.

Mr. J. Pearse has erected two large curing sheds. These are made of wattle poles and thatched with grass, and having regulating louvres to regulate the temperature during the curing process.

Mr. Pearse's Block at Winterton reminds one of the market gardens one sees in England on the outskirts of any large town, their neat paths, clean beds and planted headlands being characteristic, with not a foot of land unoccupied.

Another important crop that can be grown well at the Winterton Settlement is the *paspalum* grass. This grows to a good height, it being nearly five feet at present, and has only been planted thirteen months. The mowing machines would require four oxen to keep the speed up, the thick undergrowth making the work hard for them. The "tracker" board of the machine should also be strengthened to throw the grass into swaths without straining, the thick and heavy crop being so different from any other grasses cut for hay.

This crop, grown on the dry lands at Winterton, should increase the stock-carrying capacities of the Blocks by five hundred per cent., and for settlers who are making dairying their chief business, would give a large reserve of hay to feed their stock with during the winter months. The stock can be run in the paddocks from spring up to the end of September; then it is best to keep them off and let the hay crop come on. This should be cut and stacked by the end of January; the stock could then run on in the paddocks until the following September. The aftermath will, besides cattle, do sheep very well.

The seedsmen recommend five or six pounds of seed to be sown per acre, but from my observations I should say, to get a good stand of hay, the first season ten pounds should be put in.



## **Exportation of Naartjes.**

### THE CONFERENCE IN DURBAN.

UPON the invitation of the Government the Hon. W. A. Deane (Minister for Agriculture) and the Hon. C. Hitchins (Minister for Railways and Harbours) on the 27th March met in conference in the Railway Offices, Durban, a number of fruit growers on the coast and also from up-country. Besides the Ministers there were present Messrs. V. Seymour, A. Dryden, C. W. Rock, E. D. Goble, A. J. Harvey, L. Ducasse, F. North, D. A. English, J. Topham, H. Scott, H. Lyne, T. G. Colenbrander, H. Howard, F. L. White, etc., with Mr. Claude Fuller (Government Entomologist).

At the request of the meeting, the chair was taken by the Minister for Agriculture.

The following letter convening the meeting was then read:—

“Department of Agriculture, Natal,  
“14th March, 1908.

“SIR,—I have the honour to inform you that the Minister of Agriculture, having enquired fully into the recent trial shipments of citrus fruits to Europe, is of the opinion that, to a very great extent, the erratic prices realised for Natal fruits were due to the want of uniformity in the quality, packing and sizing of the fruits when displayed upon arrival in England. There seems little doubt, whilst much of the want of uniformity of quality may be attributed to the two methods of shipment—*e.g.*, by ventilated hold and by cool storage, quite as much depreciation occurred through faulty packing, and prices were weakened by the absence of uniformity and poor sizing.

“Arrangements have now been concluded, as the result of representations (made by the Government), for a reduction in the shipping rate, and naartje boxes and trays are now upon order for the Agricultural Department from Sweden, which, it is anticipated, will not only be of better quality, but of lower price than those employed last year. Furthermore, the Government has arranged for the opening of a Commercial Agency in London as a branch of the Agent-General's Office. Upon these grounds alone the prospects of better results being achieved are assured.

“The Minister is of opinion, however, that the time has arrived to ensure the uniformity of grading, sizing and packing of all citrus fruits sent to Europe; and, with a view to securing your advice upon the scheme which he has in mind, as outlined below, I have pleasure



in asking you to meet both the Minister for Railways and Harbours and the Minister of Agriculture, for the purpose of discussing the project on Friday, the 27th inst., at the Railway Offices, Durban, at 10 a.m.

"Should you be unable to attend the meeting, I would be glad of a written expression of your opinion and would also ask you to extend this invitation to any other gentlemen of your acquaintance interested in the development of our citrus-growing industry.

"The scheme for consideration may be roughly outlined as follows:—

"1. To equip a packing house at the Point, Durban, and to secure the services of an experienced, competent packer to take charge of the same.

"2. To receive at the packing house, upon days and under conditions to be specified by regulations, naartjes for grading, packing and forwarding to the London market.

"3. To arrange through the Government Commercial Agent in London for the sale of the fruit to the best advantage, the collection of the proceeds and the remittance thereof to Natal.

"With regard to the above, it is proposed:—

"1. To have the packing houses as contiguous as practicable to the wharves, and to fit it with a grading machine and other incidentals of such an establishment.

"2. That the fruit be delivered in large boxes (lugs) or baskets at the packing house and then graded and packed.

"3. That the boxes or baskets be returned to sender.

"4. That culls and fruits considered as unfit for export be disposed of upon the Durban market, and the proceeds entered to the credit of the sender.

"5. That a mark be allotted to each sender, under which his fruit will be sold in London.

"6. That the freight, boxwood and other charges, etc., be met out of the proceeds of sales—the freight being apportioned upon the cubic capacity of the lot made up for each sender.

"7. That boxwood and wrappers be charged at cost price, and that a fixed charge per box of trays be levied in respect of the putting together of the boxes, grading, packing and shipping.

"It is also proposed that all fruit for shipment per mail steamer should arrive at the packing house two or three days before the date of sailing, and it is further proposed to stipulate that such fruit must be properly "cured" by the sender in receptacles other than those used for railing or otherwise transporting the fruit to the packing shed. It will be stipulated that all fruit must be properly picked; and, where there is evidence of careless picking, the grader or other officer in charge of the packing house shall have the power to reject the same for export and sell it upon the local market, at sender's risk.

"In remitting nett proceeds, a statement giving sale transactions of the whole shipment and showing the basis of debiting the remaining charges, will be furnished to each sender.—I have, etc.,

"H. HIME,

"Acting U.S. of Agriculture."

Mr. Deane, in opening the meeting, said he recognised that this was a representative meeting of fruit growers from the coastal districts. There was a general desire that there should be no break in the continuity of the export of Natal naartjes started last year, and in order to establish that continuity the Government had called this meeting. They knew the weaknesses that attended last year's export, and they wanted to profit by the mistakes that were made. Their citrus fruit required no further advertisement in the Home markets. They knew that the best fruiterers in London considered that their stock was not complete without having the pretty Natal naartje. He was well aware that this year the crop was not so heavy as last year's. The conditions under which it was proposed to export this year were outlined in the Government circular, and these conditions were the only possible means of obtaining the best results. This year they would have cheaper freights, cheaper boxes, a commercial agent in London, and he might say that they would have a grading machine at the Point and a man to pack. The Government was willing to have a committee of fruit growers appointed to assist it, and was willing to allow a member of that committee to assist the Government packer and see that fair play was given to exporters, the Government would be quite willing to pay that gentleman. The industry was a very important one to the Colony, and the export must be established under conditions that would be remunerative to the grower. Last year there was a great variation in the prices realised; oranges ranged from nothing to 7s. a box, naartjes from 6d. and 9d. to 3s. a tray, and averaged about 4s. per box. It was essential that there should not be such variation. He was going to put the matter this year under the personal supervision of Mr. Fuller—a better man than whom they could not get. The fruit export trade was going to grow, and he was confident it would be more remunerative this year than last. Why should Natal not be on all fours with other countries? Why should this Colony take second place to Australia, which was double the distance, in the matter of fruit export to the Home markets? In spite of the drawbacks last year they must be determined, and he was sure that in the coming season fruit growers would be satisfied. He left the matter open for discussion, and hoped that this year they would have the growers' support in continuing the export. (Applause.)

Mr. V. Seymour thanked the Ministers for the keen interest they

were taking in fruit export. Last year the scheme adopted was merely tentative, and the consequence was that there was great laxity. Unfortunately it happened that the fruit grower was a man tied down to his farm, and therefore they could not delegate any particular one to be at the Point constantly last year, to watch the export. He was glad the Government had thought wise to put the thing on a proper basis, the only basis upon which the trade would turn out a success. The Australian Colonies were in a similar position before the Government stepped in—not only with regard to the fruit trade but with regard to other produce—and determined that exporters could not send what they liked. The success of the Australian fruit export trade was well known.

The following correspondence from gentlemen unable to be present was then read to the meeting. [Mr. South's letter, received later, has been included.—*Ed. Agric. Journal.*]:—

“Re your circular of the 14th inst., about a central packing house for citrus fruits. I am sorry, but I cannot attend the meeting to be held in Durban next Friday. I am in favour of a central packing house, under proper control, and I think the fruit growers should have a large say in the matter. If the idea of the central packing house is carried, it will then be for the meeting to thrash out the details of the working of the scheme.”

J. G. CRUICKSHANK, Umzumbi.

“I shall be glad to avail myself of the invitation through the Press to fruit growers who may be unable to attend the meeting on the 27th inst. in the Railway Offices, to express their views in writing on the above subject.

“At the present Natal is suffering from over-production of citrus fruits, and this is being felt more and more as the neighbouring Colonies are providing for their own needs in this direction year by year; and such a scheme as that outlined in your letter is the only hope that Natal fruit growers have to look to.

“During my eighteen years' experience of fruit growing in Natal I have all along been satisfied that the creation of an export trade was essential, and I have been for the last fifteen years experimenting with nearly all classes of Natal fruit, with more or less success.

“The first trial lot was sent in May, 1893, deck cargo, and was fairly successful. The second a year later, under similar conditions, but only about 50 per cent. was eatable.

“My experience of both deck and hold cargo is, that these methods should be severely left alone, as success or failure depends entirely on the weather conditions during the voyage.

“A temperature of from 40deg. to 43deg. is the best conditions under which fruit can be most successfully carried.

"I have repeatedly during the last five years sent home by cool chambers (43deg.) all kinds of fruit with and *without* wrappers, and the results have in every case met with success.

"The fruit in all cases must be well coloured, and be in a quite-eatable condition here, before it can be successfully sent Home by cool chamber, as it arrives at Home in practically the same condition as it is shipped here.

"With regard to wrappers, these are used not so much to protect the fruit as to absorb the gas given off by it; they are not really essential for small cases. Might I suggest that different colours for the different grades be used. The following extract from a letter I have from a very large importer at Home may not be amiss: 'We get oranges and mandarins from all parts of the world right up to the end of June, and my deliberate opinion is, that it would never pay you to send anything but *tip-top* fruit packed in the most attractive manner in fancy coloured papers—the more fancy the better, as anything common is simply passed over.'

"Coloured tissue wrappers can be had with printing at 1s. 1d. per 1,000, in quantities of 50,000 and over.

"No. 4—your letter, viz.: 'That culls or fruit considered as unfit for export be disposed of on the Durban Market,' etc. I would offer as a suggestion that the various consignees have the option of choosing between Maritzburg and Durban for rejected fruit, as, if this scheme goes through, Durban market will more than ever be subject to glut, and as the success or failure of this scheme depends upon the number of exporters, every inducement should be given to satisfy them that the best is being done to secure as large a return as possible for their fruit, both for export and for local sale.

"While recognising Covent Garden to be the market of the world, I would suggest for your consideration the advisability of supplying some of the larger centres, such as Glasgow, Edinburgh, and other large towns in England direct. These centres are for the most part supplied through London, and the natural sequence is that with commissions, etc., the price is prohibitive by the time its ultimate destination is reached.

"A special daily goods train for perishable goods runs between London and the North, and fruit is delivered in Glasgow and Edinburgh the following morning. The fruit rate is 45s. per ton or about 7d. per tray of 100 naartjes. The fruit market in Glasgow is quite up-to-date in every way, and has cool rooms and cold storage accommodation. The sea rate is 35s. per ton, but is not much used.

"The scheme as outlined in the Government proposals seems to me to be a very excellent one, and might be with advantage extended to other classes of fruit."

ALEX. DRYDEN, Pinetown Bridge.



"Your letter *re* export of fruit, etc., to hand this morning. I regret that other business will prevent my being at the meeting with the Ministers on the 27th inst. I think the suggestions in your letter very good indeed and hard to be improved upon, except that I think it is a pity that oranges are not to be handled as well as naartjes. I sent Home a lot of both kinds of fruit last year, and the prices I got for oranges, deck cargo, were most encouraging. Honestly I think there is a better chance for first-class oranges than there is for naartjes.

"Might I further suggest that, whatever is done in the matter the very best quality of fruit only be accepted.

"I am afraid that the country through, the citrus crop this season will be a small one, but that is only the more reason for getting things in order ready for another overflowing season like last."

C. H. MITCHELL, Imbizana.

"In answer to your circular Agr. 1308, '08, of 14th inst., I regret very much that I shall be unable to attend the meeting you have arranged for citrus fruit growers on the 27th inst., in Durban.

"I am pleased to see the Government have arranged for the reduction in the shipping rates on Natal fruits; and also to know there is a probability of a reduction for the accessories connected with the packing of same. In reference to the Government having arranged for a Commercial Agency in London, connected with the Agent-General's Office, fruit growers will have ensured to them a much better return for their fruit.

"As to the grading and packing of fruit sent to Europe, I am of opinion that fruit growers who have any interest in their consignments would take special care to see their fruit is graded and packed properly for export, and send their consignments to the Point, Durban, where a suitable warehouse should be equipped for same, with an expert packer, and one or more assistants should be in charge to receive consignments, and so examine same. Those not properly graded, blemished, or of unsuitable sizes, should be condemned, and sent to the nearest market—say, Durban—and sold, the amount realised for such, less expenses, being remitted to the consignor.

"I am not in accord with Government incurring the expenses of an expert grader and packer and a large staff of assistants to help fruit growers by grading and packing their fruit. Surely the Government has dry-nursed the fruit industry sufficiently by appointing expert graders and packers, from whom fruit growers have had all the facilities Government could possibly give to learn how to grade and pack for export, and they have themselves to blame if their returns were small for improperly packed and graded fruit. And I am against too much expenditure at the present time by Government on this account.

"In reference to Paragraph 3—Yes.

"In reference to Paragraph 6—Boxwood, wrappers, and wood wool to be charged at cost price. The amount for same to be deducted from proceeds of sale of fruit. The cost of extra lids after examination of fruit by expert previous to forwarding to Europe to be borne by consignor."

R. H. PEPWORTH, Zwaartkop.

"I regret I was not able to attend the meeting held in connection with the proposed Government scheme for the export of citrus fruits to Europe. As a fruit grower, I wish to express my sense of the importance of this prospective trade to the fruit grower of the Colony and my appreciation of the practical and truly liberal methods that the Government is adopting to revive and establish an industry that, owing to over-production and the depressed state of trade throughout South Africa, was being threatened with extinction.

"The appointment of Mr. Fuller in charge of this work is a matter upon which we growers can congratulate ourselves, for it is a guarantee that Natal is going to do its best. It will then rest with the consumers in Europe to decide whether that best is good enough."

T. S. SOUTH, Malvern.

Mr. Fuller then explained the details of the scheme. A well-equipped packing house would be erected at the Point in close proximity to the mail boat wharf. [The Central Packing Shed is to be between the railway terminus and the mail steamers' berth at the Point, practically within a few feet of both.—Ed., *Agric. Journal*.] The Colonial Treasurer had allocated a sum of money sufficient, to his mind, to equip that shed, and had further allocated a sum to buy a machine grader, which could be got from the Cape in a few days, and to engage a packer, who could be had temporarily from the Cape. There appeared to be some misapprehension as to the duties of the Commercial Agent in London. His business would be to study the markets closely and advise them as to the channels through which to dispose of the fruit. There seemed to be an impression abroad that the Government was going to charge the full cost of the scheme against the exporters. He did not think the Government had any such intention. The Government's idea was to establish a packing house and run it, and at the end of several years, if the packing house still existed and the growers liked to take it over, to hand it over at a valuation. The meeting that day was to ascertain the opinion of the growers as to the acceptance of the Government's proposals, and, incidentally, on the regulations and conditions upon which the fruit would be handled. It was useless going into minor details until they knew the growers' views. They did not want to make regulations and then find that the growers would not accept them.

Mr. Lyne asked whether the scheme, if accepted, would be compulsory on all growers? Would fruit growers be compelled to send their fruit to the Government packing agency at the Point?

The Minister of Agriculture said there would be no compulsion, but the advantage of the Government depot would be obvious.

Mr. Fuller said the Government might reserve to itself the right of refusing to supply packing boxes, which had been specially imported, to all who did not send their fruit to the Point agency.

Mr. Lyne thought growers should have a free hand in packing, and at the same time be at liberty to use the other facilities given by the Government in placing the fruit on the Home markets.

The Minister for Railways and Harbours, speaking personally, said he had made himself acquainted with the conditions of the fruit export trade in other parts, and in consequence of that knowledge he asked them to allow the Government to lay down hard and fast rules. He instanced a case from Capetown, where 3,000 boxes of fruit were not allowed to be exported simply because they did not come up to the Government standard. That was an object lesson, and it was only by such hard and fast rules that the export fruit industry could be made a success. Mr. Harrison had been sent to London by the Government to find the best markets for the fruit as it arrived Home. The Cape had appointed a similar London agent last year, and he had it on the authority of a Cape Minister a few weeks ago that the result of that was an immense fruit industry at the Cape—an industry, according to the same authority, that was going to be ten times larger in a few years, and was going to be one of the greatest sources of wealth to Cape Colony.

Mr. Lyne was of opinion that the option should be left to the grower, at any rate for this year, until they saw how the scheme would turn out.

The Minister of Agriculture asked Mr. Lyne how, in that case, quality was to be assured.

Mr. Lyne said the quality of fruit sent would rest with individual senders.

The Minister of Agriculture said if a matter like that were left to the discretion of the fruit sender the reputation of the country would suffer if inferior qualities were sent. That was, unfortunately, the case last year.

Mr. Seymour said he disagreed altogether with Mr. Lyne. (Applause.) The whole failure of last year's export was due to the fact that for every two good, conscientious senders there were six or eight who were not. Last year he (the speaker) was only able to make some three or four inspections of fruit sent Home, and if it had been in his power he would have kept certain consignments back. Towards

the end of the season he wrote to the secretary of the association to ask him for heaven's sake to inform certain exporters to send their stuff privately. A lot of the stuff sent was not fit even for the Durban market, let alone Covent Garden. If the export trade was to be a success they must have positive uniformity and the greatest discipline. He thought that in Mr. Fuller they had an ideal man to undertake the supervision, and he considered the Government programme admirable. (Hear, hear, and applause.)

Mr. T. G. Colenbrander thought it was essential that the fruit should all go through one channel, so that all should be of uniform quality.

After a good deal of discussion upon numerous points relating to freights, cost of boxwood, and the experiences of many of those present, the Minister for Agriculture said that, to settle certain doubts that had been raised, he would fix the Government price for packing at one-halfpenny per box. That would include the putting of the box together, grading, packing, wrapping, marking and fixing up bills of lading.

The following resolution, moved by Mr. T. G. Colenbrander, and seconded by Mr. Harvey, was carried unanimously: "This meeting is in favour of adopting the scheme which has been outlined by Ministers to-day."

The following committee was then appointed to confer with Mr. Fuller in the arrangement of details and the drawing up of regulations:—Messrs. Harvey, English, Ducasse, White, Colenbrander, North, Dryden, Rock, Howard, and Lyne.

The committee, appointed by the meeting of fruit growers, met upon the afternoon of the same day, the sitting lasting from 2.30 until 5 p.m. Those present were: Messrs. T. G. Colenbrander, A. Dryden, L. Ducasse, D. A. English, A. J. Harvey, H. Howard, F. Nerth, C. W. Rock, F. L. White, E. D. Goble and Claude Fuller.

With the exception of the last, to which there were two dissentients, the following resolutions were carried unanimously:—

1.—"That a portion of the Government Bond Store should be used for the Central Packing House."

2.—"That Government arrange to purchase up to 5,000 boxes (24in. x 12in. x 6in), value about 6d. each, for exporting oranges."

3.—"That fruit be received at the packing house every day, and that arrangements be made for cool storage accommodation in connection with the packing house."

4.—"That all fruit be cured at least three days before being sent to the packing house."

5.—"That shippers be recommended to forward fruit to the Central Packing House in boxes not more than 8in. in depth."



6.—“That returned fruit empties from the Central Packing House be carried free upon the Natal Government Railways.”

7.—“That consideration be given to the classification of citrus fruit forwarded by rail to the Central Packing House, for export, at special rates, upon the zone principle.”

8.—“That all fruit forwarded for export and found infested with scale, be rejected.”

9.—“That the officer in charge of fruit export shall have the power to reject all fruit which he considers as unsuitable for export.”

10.—“That first grade fruit (naartjes) be shipped in trays and second grade in boxes. Further, that for this purpose the first grade size be regarded as  $2\frac{1}{4}$  to  $2\frac{1}{2}$  inches and the second grade as 2 inches nominal.”

11.—“That the offer of the Minister of Agriculture of a charge of one halfpenny per tray for expenses incidental to packing be accepted, and that a charge of one penny per box of naartjes or oranges be charged.”

12.—“That all boxwood and wrappers used in exporting naartjes be charged against the shipper duty free.”

13.—“That 10,000 of the 20,000 boxes imported by Government (24in. x 12in. x 6in.) be available to growers for local use.”

14.—“That special arrangements be made, and special instructions issued to secure:

“(a) The railing of all fruit sent forward for export in boxed trucks.

“(b) The careful handling of the fruit by the Natal Government Railways.”

15.—“That private exporters of fruit to Europe who submit their produce for Government inspection and grade mark be allowed a rebate of the duty on all imported boxes, the contents of which are passed and marked.”

16.—“The committee recommends that all shipments of citrus fruit be pooled and sold under one mark.”

At the time of going to press the Government's replies to the resolutions are not ready for publication, but most of the resolutions submitted by the committee have been very favourably considered, and every endeavour to meet the suggestions in the most practical manner is being made.

---

By a Proclamation appearing in the *Natal Government Gazette* of 31st March, the Magisterial Divisions of Underberg and Ipoela were amalgamated, to be known in future as the Magisterial Division of Ipoela. Branch Courts are to be held at the Court House at Underberg.

## **Cattle Poisoning.**

### EFFECT OF INCAUTIOUS SPRAYING.

IN a report to headquarters, Mr. Chas. Tyler, District Veterinary Surgeon, Maritzburg, states that on the 3rd April he visited Mr. Lawes' farm at Gezabuso and found there the carcasses of six oxen, whilst others had already been buried. He states that all these oxen had been dipped on the afternoon of the 1st; eleven were found dead the next morning, and the remaining one died at nine o'clock.

Mr. Tyler made *post-mortem* examinations, but the results contained no evidence of East Coast Fever or other specific disease, and no organisms were observed in the blood slides which he took. He reports that the skin of the flanks, etc., showed signs of having been dressed with some strong application, and in his opinion there is no doubt that the cattle died of poisoning, the result of dipping.

The dip used was supplied by a local firm. It is of no special brand, but is an American dip, and, according to the local vendors, should be used in the proportion of one pound of the dip to 14-16 gallons of water. Instructions for mixing were sent out with the dip, but failed to reach Mr. Lawes, and accordingly the strength to be used had to be guessed, with the result that every animal dressed died within eighteen hours. Half a small corned beef tin of the dip was mixed with a large bucket of water—holding about four gallons.

The foregoing emphasises the necessity for very careful mixing and handling of dips. If there are no instructions accompanying the preparation the vendors should be asked to supply same, but in no case should an unknown dip be mixed by simply guessing the proportion of poison and water.

---

Frozen meat statistics for the Argentine for January last show that 235,978 carcasses of mutton and 201,926 quarters of beef were frozen, against 225,196 and 158,319, the figures in January of 1907. During the month under notice a shipment went to South Africa consisting of 20,882 quarters of beef and 3,304 carcasses of mutton for Natal. This is the first shipment made to that part of the world since August last.

## ***East Coast Fever.***

---

### RECENT REGULATIONS.

---

SINCE our last issue a Government Notice (No. 185) has been issued cancelling all Government Notices under the East Coast Fever Act of 1903 and amending Acts in so far as they apply to the Magisterial Divisions of Lower Tugela, Mapumulo, Indwedwe, and Inanda, and the following has been substituted therefor. This cancellation does not, however, apply to Government Notice No. 160, 1908, prohibiting the removal of grass hay, and of hides, hoofs, horns, skins, or hair: In terms of Section 3 of Act No. 54, 1906, the Minister of Agriculture has declared the Magisterial Divisions of Lower Tugela, Mapumulo, Indwedwe, and Inanda to be infected areas within the meaning of the Act, and has prohibited the ingress or egress of cattle into or from and the movement of cattle within these Divisions. Notwithstanding this prohibition, however, healthy cattle may be moved within the boundaries of any of the said Divisions on permission, in writing, from a member of the local committee appointed to issue such permits, or, where no such committee exists, from the Magistrate of the Division. Healthy cattle may also be moved from any one of the said Divisions into any other on permission, in writing, from the Chairman of the Advisory Committee, or, where no such committee exists, from the Magistrate of the Division whence the cattle are to be removed, but no such permit will be valid until countersigned by the Chairman of the Advisory Committee, or, where no such committee exists, by the Magistrate, of the Division into which the cattle are to be removed. Healthy cattle for slaughter may also be removed from any station on the line of railway between the Umgeni and Tugela Rivers upon permission, in writing, from the Principal Veterinary Surgeon, subject to such conditions as he may see fit to impose, and subject also to the payment of such charges as may be, from time to time, decided upon by the Minister of Agriculture to cover the expenses of temperaturing, branding, etc. Permits for the removal by road from any of the said Divisions to any station on the said line of railway must be obtained from the Chairman of the Advisory Committee, or, where no such committee exists, from the Magistrate, of the Division whence the cattle are removed, but such permits shall not be valid until first countersigned by the Chairman of the Advisory Committee, or, where no such committee exists, by the Magistrate, of the Division into or through which the

cattle may require to proceed, and shall be subject to such conditions as the said Chairman of Advisory Committee, or Magistrate, shall see fit to impose.

By Government Notice No. 92, 1908, the main line of railway between Padleys Station and the Transvaal Border was declared, under the East Coast Fever Act, a fixed quarantine boundary. Government Notice No. 175 notifies that the following quarantine boundary has been substituted: The main line of railway between Padleys Station and the point where the double fence on the Town Lands of Newcastle, on the east of the main line of railway, joins the railway fence, thence along said double fence on the Newcastle Town Lands, on the east of the main line of railway, to the point where the said double fence again joins the railway fence, thence along the main line of railway to the railway crossing at Mount Prospect Station, on the farm Samson's Klip, thence along the fence on the east of the Charlestown main road to the junction of the said fence with the fence on the farm "Coothill," thence along the fence on the southern boundary on the farms "Coothill" and "Armagh," to the Buffalo River, and thence along the fence up the Buffalo River to the junction of the said fence with the Transvaal Border fence at Drystream.

Government Notice No. 184 notifies that the railway station at Elands Kop, and the fenced-in outspan at that place, have been declared, for the purpose of the East Coast Fever Act, a portion of the Magisterial Division of Impendhle, and that all restrictions or regulations that now or hereafter may be in force in the Impendhle Division will hold good for the Elands Kop railway station and fenced-in outspan. By another Government Notice (No. 214) the portion of the farm "Strathfieldsay," occupied by Mr. A. Fawcus, bounded on the west by the fence running along the verge of the rocky declivities of the Intimbankulu Hill, on the east and south by the farms occupied by Mr. S. Large, and on the west and north by the portion of the farm "Strathfieldsay," occupied by Mr. Watson, has for the purpose of the East Coast Fever Act, been declared a portion of the Magisterial Division of Camperdown, and all restrictions or regulations which now or hereafter may be in force in the Magisterial Division of Camperdown, will hold good as regards the said portion of the farm "Strathfieldsay." The Mooi River, from the point where it crosses the eastern boundary of the farm "Kruisfontein" to the point where it joins the western boundary of the farm "Stanley Heights," has been declared (Government Notice No. 213) a fixed quarantine boundary, and the removal of all cattle from one side to the other of the river has been prohibited.



## **Afforestation.**

### CHIEF FOREST OFFICER'S REPORT FOR MARCH.

THE Chief Forest Officer reports as follows to the Acting Conservator of Forests:—

I have the honour to report for March. Foresters have been collecting data concerning the Crown Forests in their respective districts, with a view to its use in determining which should be withheld from alienation in the public interest. In districts of large size, with numerous bushes of varying character, this work involves much enquiry and travelling; and though I have accumulated much information, I am not yet in a position to present a complete report. Stretching across the Colony, from the coast of Zululand on the one hand, and extending far into the Cape Colony on the other, Natal possesses a sylvan girdle, now in rags, it is true, but not beyond repair. There is still enough of it left to show what it must have been like when the forests of Ngoya, Eshowe, Entumeni, Nkandhla, and Indeni were knit together by the thorn bushes of the valleys, and similarly connected across the Tugela with the magnificent Karkloof, with the Nottingham and Zwaartkop, Richmond, Unkomaas, and Polela forests, passing on through East Griqualand, where many fine forests linked up with those of northern Alfred County. For the Karkloof forests, practically thrown away in the earliest days of the Colony, if not during the "Natalia" period, no value was ever received; and their treatment is an object lesson in results of private ownership.

Very little consideration, however, is required to show how greatly this girdle of unbroken forest must have affected Natal beneficially, joined as it was to a broad scarf on the shoulder of the Berg. When the rains fell most heavily a spongy bed, extending beneath shade for hundreds of square miles, stored the waters against lean years of drought, and maintained at normal level rivers now alternating between trickling streams and raging torrents. The cool air above the trees in summer condensed every passing cloud, now evaporated by the reflected heat of bare surfaces; thus, the rainfall was formerly greater in Natal as well as better stored. Rich soil, which, since the forests were destroyed, has been washed into the sea by deluges upon an unprotected surface, used to support a rampant flora now only to be found in favoured spots. The parching winds which now wilt our crops, cooled and moistened by forest exhalations, brought life to all they visited, and must have made destruction by winter fires more-

difficult than now. Commenced by the primeval Bushmen and continued by the Kafirs, this method of destruction was yearly made easier by its own effects; until, as now, we are compelled to utilise the same destructive element to protect the remaining forests from its ravages. Fire is the great enemy of forest, and the forester who prevents its approach to the edges of bush is doing more than half his duty. We are now in the month—April—in which foresters should, *vide* “General Instructions,” be burning protective strips round the forests, and I hope that they are giving the matter close attention.

Forester Tustin is nearing completion of the work of off-setting the wooded perimeter of the Bangeni, but I shall have to await a lull in general duties before I can plot his measurements and those of Forester Fernando at the more intricate Xalingena. Under the most favourable circumstances the production of a map showing the actual wooded areas in rugged country is a slow process. Its value is obvious, and as it represents much time and labour, I shall be glad when the safety of the maps already drawn is assured by their mechanical reproduction. Copies of these would also be encouraging to those engaged in the work, and a revelation to persons careless of our Crown forests.

Foresters Chilvers, Houshold, and Tustin report good crops of seedlings at the Ingeli, Qudeni, and Impetyene respectively, in the sections and at the edges. They specially mention sneezewood, yellowwood, white ironwood, spiekhout, candlewood, and schmidilia. Many kinds are now in seed or have ripened their seed, and foresters should be supplying same to Cedara.

At Emkazeni, Forester Fernando has been much occupied in planting out deodars before the dry season; two hundred and forty along twelve hundred yards of the open part of the Western Ride, in pairs at thirty feet intervals, and many more of the same along the contours of the spurs above the Forest Station. Below the latter, about fifteen species of eucalyptus will strike a contrasting note, and thus form a fine background, with the natural forest in support behind all.

Forester Symons, of Giant's Castle, reports well of the trees planted there, especially of the *Cryptomeria Japonica*, *Pinus insignis* and *pinaster*, and nine species of eucalpts; also of European fruit trees—apples, cherries, plums, peaches—which have borne fruit this year. The broadcast sowings of oaks and pines are also doing well.

Forester Meyer, of Pongola Bush, finds that the soil has proved too rich for the black wattles there, which are being killed by weeds, and asks for more suitable species of trees. Of pests, Forester Purser reports from Ngoya that locusts have been hatching out and damaging the crops of the natives near the forest.

The March reports generally bear out those of the previous month

as to the great increase in numbers this year of game and of all wild animals. Ipití and duiker buck are quite a pest in many places, and, as it is easy to have too much of a good thing, some measures should be taken to thin their numbers. There is no need to revert to the massacres of former years, when a tribe of savages, headed by the local Magistrate, surrounded a bush and slew everything that lived in it; but it should be easy for genuine sportsmen, with dogs or without (and a few beaters well in hand), to obtain a fair amount of sport. Such would welcome the presence of the forester, and, as the latter should be made responsible for the conduct of a hunt, no license should be available for use without reference to him—at all events for demarcated Crown forests.

A case of poaching in the Giant's Castle Game Reserve occurred during the month. Natives were the guilty parties, and got off with a caution. Forester Symons succeeded in shooting the dogs, and his action was questioned by the defence, but it was doubtless necessary in the course of duty. Besides stray dogs, the forester destroyed other vermin, such as polecats, hawks, a weasel, and a tiger-cat. His guinea-fowl are prospering, but he would like to have a pair of wild birds. The pheasants have all died.

Forester Symons observed a bird unknown to him, of the size and shape of a white cockatoo, but brown in colour, which he thinks must have strayed down from the interior.

Forester Ball, of Olivier's Hoek, reports destruction of goats by leopards, and considers that the latter have also killed many bush-buck in the Inkerman bush. Leopard skins are suitable ornaments for forest lodges. Forester Moller, of Normandien, complains of baboons giving trouble to farmers.

Forester Household, of Qudeni, reports that he gave permits for 218 bundles of wattle during the month, which adds another ten thousand young trees to the twenty thousand cut in the previous month. No forest can stand this for very long.

Forester Purser has now moved to Bulwer, which station, I believe, he will considerably improve by his ability and energy. Mr. Frank Green acts as part-time forester at Ngoya, and one more acquainted with the country and the natives could not possibly be obtained.

Good rains fell everywhere during the month.

G. H. DAVIES.

Chief Forest Officer, Natal.

10th April, 1908.

---

 QUARTERLY REPORT.
 

---

CONSERVATOR OF FORESTS,—In response to your request for a quarterly summary of the afforestation work, I have the honour to report as under:—

Owing to the necessity for economy in every direction there is but little extension work at Cedara to chronicle, what has been undertaken being done in order to give the students practical instruction in plantation operations. The following acreages of eucalypts have been put in on the site originally planted with *Grevillea robusta* (Silky Oak), which, as previously reported (see *Agricultural Journal*, November, 1907), were killed by the severe frosts of last winter.

*Eucalyptus amygdalina* var. (Giant Gum), 2.08 acres;

*Eucalyptus tereticornis* (Forest Red Gum), 2.48 acres;

*Eucalyptus stuartiana* (Apple Scented Gum), 0.43 acres.

The 1½ acres occupied by *Syncarpia laurifolia* (Turpentine Gum), another frost-destroyed species, has also been cleared and planted with *Eucalyptus amygdalina* var. A shelter belt on the south side of the experimental plot has been put in, the top half being sown with *Acacia melanoxylon* (Blackwood) and the bottom half planted with *Cupressus horizontalis* (Spreading Cypress). Blackwood has not proved very hardy here, otherwise the belt would have consisted of it entirely. Some much-needed wind-breaks have been planted in the Orchards; these are three lines deep, and consist in the Eastern Orchard of *Pinus pinaster* (Cluster Pine), *Callitris australis* (Oyster Bay Pine), and *Casuarina tenuissima*; in the Western Orchard of *Pinus longifolia* (Cheer Pine), *Cupressus lusitanica* (Cedar of Goa), and *Callitris australis*. Plantation thinning has been taken in hand, and is now providing firewood for all Native and Indian employees and also supplies the College kitchen and laundry and the farm engine with fuel. The surplus is being disposed of to residents upon the Central Experiment Farm at current firewood rates.

On the re-opening of the School of Agriculture I commenced a lecture course upon afforestation, and have so far delivered five lectures, the first two being a general review of forestry in South Africa, its influence on climate and the necessity for afforestation and the conservation of the remaining natural bush. The subsequent lectures have dealt with nursery requisites, seed sowing and cutting-making.

The stock in the Nursery is now: Specimen trees in buckets, 728; specimen trees in half tins, 8,536; specimen trees in quarter tins, 2,080; transplants in stock tins, 300,000; deciduous species in nursery beds, 25,900.

The season has, on the whole, been favourable. No hail of consequence has been experienced; and with the exception of *Populus alba*



(White Poplar) no trees have been killed by inundation. The maximum temperature registered at the Nursery was 100deg., the minimum 43deg.

The revenue has been: January, £59 15s. 3d.; February, £19 10s. 3d.; March, £20 16s. 11d.; as compared with £55 14s. 5d. in January, £46 17s. 3d. in February, and £12 5s. 5d. in March of last year.

*Pinus halepensis* (Aleppo Pine) is not doing well, but all other species have made good increment in the period under review.

In the smaller and truly experimental patches *Ginko biloba* (Maiden-hair tree) and *Podocarpus Thunbergii* (Yellow-wood) have made no growth and *Celtis australis* (Australian Nettle Tree) and *Kiggelaria dregeana* (Wild Peach) have failed completely.

Correspondence has not been heavy compared with the previous three months the letters from the public numbering 223 and 334 respectively.

The work at Empangeni, as at Cedara, has been curtailed for want of funds. Forester Clark, who is in charge of the operations there, reports: "The average height of the 26 kinds of Eucalyptus planted March, 1905, is now 15in., the species making the fastest growth are *Eucalyptus diversicolor* (Karri), *E. pilularis* (Black butt), *E. maculata* (Spotted Gum), *E. corynocalyx* (Sugar Gum), and *E. paniculata* (Torr Vale Gum). One species, viz., *E. obliqua* (Stringy Bark), has died out entirely. Of the rubber-producing trees, *Manihot glaziovii* (Ceara) is doing best. Eight hundred *Hevea braziliensis* (Para) have been planted 25ft. by 25ft.

"The mealies planted as a catch crop between the cocoanuts and the second season gums will be ready for reaping shortly. The ground nuts put in between the *Grevilleas* give promise of a good yield."

F. J. STAYNER,  
Chief Afforestation Officer.

A sale took place at Toronto, Ontario, on 6th inst., of Shorthorns belonging to Messrs. Robert Miller and Donald Gunn and Son. The average price of twenty-seven females was £32, and of eight bulls a similar figure. Imported females sold as follows:—Maid of Promise 24th and bull calf, £53; Ruby 2nd and cow calf, £35; Rosetta 11th and cow calf, £50; Averno, £40; Princess Royal 25th and bull calf, £96; Rosemary of Shethin 2nd and cow calf, £36; Roan Lady 37th, £35; and Roan Lady 38th, £75. Imported bulls sold thus:—Violet's Crown, £59; Spicy Ring, £38; and Braco, £36.

## **Laboratory Notes.**

By ALEX. PARDY, F.C.S., etc., Analyst.

### WATTLE BARK.

A NUMBER of samples of wattle bark arranged in two series were recently prepared by Messrs. Holley Bros., of Wartburg, with the object of ascertaining how the various weathering effects to which bark is liable during the process of drying react on the value of the bark as regards its tannin content.

Two trees were selected for the purpose, one marked A and the other B. The bark from these was taken in such a way that as far as possible each section in the series would be of equal original value. The treatment accorded to the barks after stripping corresponded in each series, so that the one would be a check on the other and thus corroborate the results of the examination.

The following are the details of the preparation of the various sections given under their distinctive numbers:—

No. 1. Bark dried entirely in the shed.

No. 2. Bark exposed to the sun and put in the shed at night or in the event of rain.

No. 4. Bark allowed to get wet when just stripped, otherwise dried entirely in the shed.

No. 5. Bark wetted when half dry, but otherwise dried entirely in the shed.

No. 6. Bark wetted when dry and then re-dried, otherwise dried entirely in the shed.

No. 9. Bark dried with inner side exposed to sun.

No. 10. Continuously wetted.

NOTE.—Messrs. Holley Bros. write that No. 4 was put in a bath of rain water for three minutes soon after stripping. This had to be done, as it did not rain as anticipated.

No. 5 was put in the rain when half dry, but only 0.36 inches of rain fell on that date. They were therefore returned to the shed and given another wetting of about 0.40 inches of rain two days later.

No. 6 was put out when dry and received a wetting of about 0.90 inches of rain and then re-dried. Both Nos. 5 and 6 were shed dried.

No. 9 was dried in the sun and put in the shed in the event of rain.

No. 10 received a wetting of about two inches of rain during the

drying process. The inner side of the bark was not exposed to sun or rain.

The bark was taken from trees exactly eight years old.

The following results were obtained on analysis of the bark:—

SERIES A.

| No.     | Moisture. | Loss on Ignition. | Ash. | Total Soluble Solids. | Non-Tannins. | Tannins. | Value Order. |
|---------|-----------|-------------------|------|-----------------------|--------------|----------|--------------|
| 1 ...   | 10.96     | 87.20             | 1.84 | 50.17                 | 12.49        | 37.68    | 2            |
| 2 ...   | 10.75     | 87.83             | 1.42 | 51.12                 | 14.49        | 36.63    | 5            |
| 4 ...   | 11.57     | 86.85             | 1.58 | 49.93                 | 14.17        | 35.76    | 7            |
| 5 ...   | 12.36     | 85.50             | 2.14 | 50.85                 | 12.76        | 38.09    | 1            |
| 6 ...   | 12.73     | 85.50             | 1.77 | 48.96                 | 12.54        | 36.42    | 6            |
| 9 ...   | 12.35     | 86.12             | 1.53 | 51.63                 | 14.22        | 37.41    | 3            |
| 10 ...  | 12.58     | 85.45             | 1.97 | 50.11                 | 13.07        | 37.04    | 4            |
| Average | 11.90     | 86.35             | 1.75 | 50.39                 | 13.39        | 37.00    |              |

SERIES B.

|         |       |       |      |       |       |       |   |
|---------|-------|-------|------|-------|-------|-------|---|
| 1 ...   | 12.59 | 85.70 | 1.71 | 49.62 | 14.06 | 35.56 | 1 |
| 2 ...   | 12.23 | 85.84 | 1.93 | 49.28 | 14.88 | 34.40 | 5 |
| 4 ...   | 12.58 | 85.73 | 1.69 | 48.09 | 14.14 | 33.95 | 7 |
| 5 ...   | 11.35 | 86.92 | 1.73 | 48.06 | 12.51 | 35.55 | 2 |
| 6 ...   | 10.33 | 87.88 | 1.79 | 47.54 | 12.15 | 35.39 | 3 |
| 9 ...   | 10.95 | 87.33 | 1.72 | 47.58 | 13.44 | 34.14 | 6 |
| 10 ...  | 11.26 | 87.17 | 1.57 | 48.00 | 12.87 | 35.13 | 4 |
| Average | 11.61 | 86.65 | 1.73 | 48.31 | 13.43 | 34.87 |   |

Between the maximum and minimum there is a difference of 2.33 and 1.61 per cent. in tannin in the series A and B respectively. Nos. 1 and 5 in each case attain the first, or first and second places, and there is a curious fact to be observed in regard to No. 5: that its non-tannin contents are considerably below the average. Whether this is due to some change caused in the bark, due to a slight wetting after having once become semi-dried or not, it is as yet difficult to say, but some change in the condition of the soluble contents is pointed to both in the case of Nos. 5 and No. 6, in which latter case the bark was wetted after having once become dry. The amount of rain falling on No. 5 has apparently had little more effect than damping it. No. 6, in the case of which the amount of rain falling on the bark on one occasion was greater, has suffered slightly, as will be seen by the decrease in the soluble solids.

The most serious consequence is that following the wetting of the bark immediately after stripping, both series agree in respect of the injury to the tannin contents and its relegation to the lowest place in the series.

The bark dried in the shed appears to be slightly superior to that dried in the open, although the latter has not been allowed to become wet.

## **Exchange Reviews.**

### WHAT OTHERS ARE THINKING AND DOING.

THE *Cape Agricultural Journal* for April contains a long and interesting paper by the late Dr. Hutcheon on "Scab: its Nature, Cause, Symptoms, and Treatment." Some practical suggestions of value to sheep owners are given; and an addendum by the Chief Inspector of Sheep contains directions for the use of sulphur and lime and sulphur and caustic soda as dips for sheep and goats, together with directions for treatment of infected kraals. Illustrations are given of the *Symbiotes caprae* or common scab mite of the Angora goat, *Sarcoptes caprae* or common scab mite of the Boer goats, and *Psoroptes ovis* or common scab mite of sheep. A useful article by the Director of the Veterinary Laboratory at Grahamstown (Mr. W. Robertson, M.R.C.V.S.) discusses colic in horses and gives directions for its treatment; and readers interested in poultry-keeping will find much useful information in a paper on Langshans, read by Mr. A. B. Wilkinson before the Cape Peninsular Poultry and Pigeon Society recently.

The fifteenth volume of the *Journal* of the British Board of Agriculture begins with the issue for April, and it is announced that arrangements have been made for the introduction of several new features. The size of the *Journal* will be increased from 64 pages to 80 pages each month, and this additional space will be filled, amongst other matter, with a monthly article on the course of trade in agricultural produce. An attempt will also be made to print from time to time reports on the conditions of fruit crops abroad, especially on the Continent, and on the trade in those articles which compete with home-grown articles.

The three chief articles in the March number of the *Journal* are: "The Pruning of Fruit Trees" (first instalment), by Walter P. Wright; "Advantages of Goat-Keeping," by "Home Counties"; and a paper on "The Poisonous Properties of the Beans of *Phaseolus lunatus*," by Prof. W. R. Dunstan, F.R.S., LL.D., and T. A. Henry, D.Sc.

### **Cape Tannin Materials.**

The *Bulletin* of the Imperial Institute (Vol. V., No. 4) contains the results of analyses of tanning materials from India, the British Colonies and elsewhere. Looking over the sections devoted to South



African barks of various kinds we read that about the beginning of last year the Imperial Institute received from the Trades Commissioner of the Cape of Good Hope a series of samples of barks of *Acacia* trees found in the Colony with a request that they might be examined and reported upon as to their value as tannin materials. Upon analysis a sample of *Acacia pycnantha* bark gave a percentage of 40.09 of tannin; two samples of *A. decurrens* yielded respectively 35.36 and 44.15 per cent. of tannin; a sample of *A. saligna* contained 26.38 per cent. of tannin; a sample of *Mimosa* bark 18.00 per cent.; and a sample of *Acacia horrida* 18.28 per cent. The three last-named samples were from species indigenous to Cape Colony. The first three barks were of good quality, rich in tannin, and yielded leathers similar in character to those obtained by the use of Natal and Australian barks. The samples were valued by brokers at £6 10s. to £7 10s. per ton. The other three samples were too poor in tannin to be worth consideration for export purposes, since they possessed no special qualities likely to commend them to European tanners.

Included with the mimosa barks from Cape Colony were three unidentified barks, to which reference is also made in the *Bulletin*. The first of these, a sample of *Krupelhout*, consisted of small pieces of thin bark having a smooth dark outer surface and an inner pale, reddish, fibrous and reticulated surface. Upon analysis it was found to contain 18.75 per cent. of tannin; and it produced a bright red leather similar in type to that furnished by mangrove bark. The second sample was composed of quills of bark of the *Klipphout*, about  $\frac{1}{4}$  inch thick and showing a rough dark outer surface with yellow spots and a smooth striated inner surface of terra-cotta colour. This sample was rich in tannin, containing 32.97 per cent., and yielded a slightly brittle leather resembling that produced by the bark of *Acacia saligna*, but lighter and brighter in colour. The third species was unnamed; it contained 17.27 per cent. of tannin, and yielded a dull, dark-brown soft leather. *Klipphout* is the only one of these barks which is worth consideration for export purposes.

### South African Botany.

We are in receipt of the first, second and third parts of the *Records of the Albany Museum* (C.C.), consisting of two papers by Dr. S. Schoenland. The first of these is the commencement of a "List of the Flowering Plants found in the Districts of Albany and Bathurst, Cape Colony," which will doubtless supply a long-felt want of students of the botany of those parts of South Africa and will also be of value to those engaged in phytogeographical studies. The list so far published is of plants belonging to

the Gymnosperms, Monocotyledons, and Dicotyledons. The whole list has, the author states, been practically drawn up, and it will probably contain about 1,800 species. A general discussion of the special features of the vegetation dealt with is promised when the complete list has been published. It may be stated that the districts of Albany include, roughly, the country bounded in the east and north by the Fish River, in the west by the Bushman's River, and in the south by the Indian Ocean.

The second of Dr. Schoenland's papers is a discussion of "Some new and some little-known species of South African plants belonging to the genera *Aloe*, *Gasteria*, *Crassula*, *Cotyledon* and *Kalanchoe*." The plants described are: *Aloe Broomii*, Schoenl., *nov. sp.*; *A. castanea*, Schoenl., *nov. sp.*; *A. parvibracteata*, Schoenl., *nov. sp.* (allied to *A. transvaalensis*); *Gasteria Beckeri*, Schoenl. (allied to *G. parvifolia*, Bak.); *Crassula con-nirens*, Schoenl., *nov. sp.*; *C. planifolia*, Schoenl., *nov. sp.*; *C. Peglerae*, Schoenl., *nov. sp.* (closely allied to *C. ramuliflora*, Link., and also to *C. Meyeri*); *C. Cooperi*, Rgl., var. *robusta*, Schoenl., *nov. sp.*; *C. setulosa*, Haw., var.; *C. Gillii*, Schoenl., *nov. sp.*; *C. Engleri*, Schoenl., *nov. sp.* (Dr. Schoenland has come to the conclusion that this is a dioecious species, and, if so, it is the only one in the genus *Crassula* known so far); *C. Broomii*, Schoenl., *nov. sp.*; *C. barklyana*, Schoenl., *nov. sp.*; *C. serpentaria*, Schoenl., *nov. sp.*; *C. Rogersi*, Schoenl., *nov. sp.*; *Cotyledon heterophylla*, Schoenl., *nov. sp.*; *Kalanchoe pyramidis*, Schoenl., *nov. sp.* Notes are also given on *Cotyledon ventricosa*, Lam., *C. cacalioides*, Linn., *C. Wallichii*, Haw., *C. Pillansi*, Schoenl. (*C. cuneata*, Haw., *non* Thunb.), and *C. cuneata*, Thunb.

### **Blackhead Diseases in Turkey.**

From the Agricultural Experiment Station of the Rhode Island College of Agriculture (U.S.A.), have come two bulletins dealing with the "Blackhead disease" (infectious entero-hepatitis) in turkeys. These give the results of experiments made by the Station in co-operation with the Bureau of Animal Industry of the U.S. Department of Agriculture. These experiments indicate, so far, that the eggs do not carry amoebae or the organism which is the direct cause of the blackhead disease. Poults or adults become affected with the disease at some period after they become exposed to contaminated surroundings. This period is usually within four weeks, and the poults most commonly die in from 12 to 24 days after exposure, although some may escape for months. Common fowls have been found to be hosts of the disease-creating parasites, and, with the adult turkeys, spread them broadcast through their droppings; poultry yards are thus heavily infected. Poults, it is found, may be successfully reared to maturity on comparatively small areas; while doing so they pass with little or no loss through two marketable stages, namely,

those of the broiler and small roaster. The parasites seem to be easily killed by drying, and dry sandy soils would, therefore, seem to be preferable for turkey rearing. No breed of turkey thus far tested is immune to the blackhead disease, for all of them, at all ages, so far as tried, have died of it. The older turkeys apparently resist the disease better than those which are very young, since about 20 per cent. of the former have been found to die in the course of the year, and about 90 per cent. of the latter. The experiments show that turkeys should be reared away from the house, and that they should be kept from all fields where ordinary fowl are likely to forage.

---

### ***Sugar Cane Experiments in B.W.I.***

Year after year experiments are continued by the Imperial Department of Agriculture for the West Indies with varieties of sugar canes and the results published of each season's work. The object which is steadily held in view is to obtain such varieties as will best suit the varying soil and climatic conditions existing in the different districts of the island of Barbados. To this end numbers of new canes are raised from seed annually, the number depending in a great measure on the climatic conditions existing during the flowering season of the sugar-canes. When the weather conditions are favourable large numbers are easily grown; on the other hand, when drought ensues at the time the sugar-canes are flowering, the seeds are by no means as fertile, consequently comparatively few germinate. Seeds of the sugar cane are sown in boxes towards the end of November or the beginning of December in each year. As soon as the plantlets are sufficiently advanced they are pricked out into pots, and when they are about ten or twelve inches high they are planted—usually in the month of May—in a field arranged for irrigation, so that they may be grown to maturity by the May of the following year. In a year's time those varieties which from their field characters are considered good enough for reproduction are cut, weighed, crushed, and the juice is analysed, but only the stools from those canes which contain fairly rich and pure juice are replanted. The stools of the canes selected are taken up, divided in half, and planted where they can be irrigated; care is also taken to label each variety. At the same time a plan is made showing the position of each stool in the field. During the following December the canes from these stools are made into cuttings and replanted. From that time onwards each variety is annually propagated and multiplied in the usual manner, and grown in competition with the White Transparent, the standard cane. If the results of the new canes when grown under similar conditions as the standard cane justify it, the new canes are cultivated on the various experimental plots in the black and red soil districts, until they are either ultimately rejected or cuttings are supplied to the planters with the recommendation to try them on a small scale and, if the results justify it, gradually to increase the areas under cultivation.



Such, in brief, is the method in which the foundation and selection of new varieties of cane are made by the Imperial Department of Agriculture, and the results of each season's work are, as we have already said, published periodically. The results of the experiments carried on during the season 1905-7 have just been published in the Pamphlet Series of the Department's publications, preliminary to the appearance of full details in a bulkier report. From this preliminary report we find that, for the season under review, on the selected variety estates B. 3696 cane gave the best results on the black soils with a yield of 2,045 lbs. of saccharose per acre in excess of that given by the standard cane, White Transparent, while the variety B. 208 came second with an increase of 1,494 lbs. of saccharose over the yield of the standard cane. Such yields represent increased values of \$29.61 and \$21.63 per acre respectively. B. 147 came third and showed an increased value of \$13.34 per acre. On the red soils, as plants and ratoons, B. 1,566 again gave the best results, showing a yield of 8,394 lbs. of saccharose per acre as plants and of 6,645 lbs. as ratoons, against 6,006 lbs. per acre from White Transparent as plants and 5,736 lbs. as ratoons, representing a total gain of \$47.73. The other canes which gave good results were: B. 3635, D. 95, B. 1753, B. 376, and B. 1529 on black soils, and D. 95, B. 376, and B. 208 on red soils. The tables giving the average results of the best varieties for the last four years show that on black soils B. 3696, B. 1753, B. 1529, and B. 147 gave the best returns as plants; while as plants and ratoons, taken together, B. 208 gave, on the average, 5,542 lbs. of saccharose per acre, as against 5,197 lbs. from the standard variety. In red soils, as plant canes, B. 3405 gave the best results, whilst the returns of B. 3412, B. 3390, B. 1566, B. 208, B. 1529, and B. 376 were also far in excess of those of White Transparent.

The results of the manurial experiments indicate, generally, as in previous years, that large and profitable increases in yield are obtained by the addition of artificial fertilisers supplying nitrogen to the ordinary application of farmyard manure and that ordinary applications of farmyard manure plus artificials gave better results than when large quantities of farmyard manure without artificials were employed. The results obtained by the application of phosphatic and potassic manures varied considerably, and it is noticeable that in some instances notable increases of yield resulted.

### ***Insecticides and Fungicides.***

The Eighth Report of the Woburn Experimental Fruit Farm, which has lately reached us, deals entirely with insecticides and fungicides. In pursuing this work, of which a first instalment was given in the Sixth Report, the aim has been to substitute as far as possible exact quantitative measurements for the more crude and unsatisfactory methods usually



adopted, "in which the impression produced on the mind of the observer is the sole standard by which the successive failure of an insecticide is gauged." The principle on which the action of insecticides has been examined was to ascertain, in the first place, what that action is when the substance in question is applied under the simplest and most perfect conditions possible, and then to ascertain the results when it is applied in the plantation under ordinary conditions of practice. Besides investigations on the effect of certain insecticides, the report contains an account of an examination as to the nature of the substances constituting some of these insecticides. The report includes sections discussing Bordeaux Mixture, Lead Arsenate, Emulsions, Mussel Scale, Moss and Lichen, Apple Sucker, Apple Mildew, Apple Leaf Spot, Aphis, Woolly Aphis, Caterpillars, the adhesive power of washes, the effect of various washes on trees, and the nature of the action of insecticides; while an appendix contains three papers by Spencer Umgreville Pickering, M.A., F.R.S., on "the interaction of metallic sulphates and caustic alkalis," "the chemistry of Bordeaux Mixture" and "emulsions" (discussed from a chemical point of view). The report (which consists of 127 pages exclusive of 41 pages comprising the appendix) is published by the Amalgamated Press, Ltd., Carmelite House, Carmelite Street, London, E.C., at the price of 2s. 9d., including postage.

---

What is claimed as a record for length of service as a shearer is reported from Rakaia, New Zealand. P. Laraman, of that place, has followed the occupation of a shearer for fifty-two years, and during that period he never missed a season without taking his place on the "board."

---

A number of Australian racehorses have been imported into Japan. In Japan racing clubs are springing up like mushrooms, and racing is even carried out on Sunday. One of the principal clubs put £60,000 a day through the totalisator. Mostly small horses are used, and every horse has to carry 9st. 11lb., so that good stout sorts, with breeding and stamina, are needed. In Japan everything is arranged to have the best horse win, and so remain until something able to lower his flag comes along. What a Flying Fox or an Ormonde would do for one in Japan!

## **Gardening Notes for May.**

By W. J. BELL, Nurseryman, Florist and Seedsman, Maritzburg.

WHERE water is available small sowings may be made of cabbage, beet, kale, carrot, lettuce, mustard and cress, parsnip, radish, turnip, spinach, and the various kinds of herbs, such as parsley, sage, thyme, marjoram, savory, etc.

Earth up cabbage and cauliflower plants as required; keep the surface well stirred up between the rows of all growing crops, and commence to water freely as soon as dry weather sets in. Plants that are well advanced should have occasional applications of liquid manure, and especially the cauliflower, if fine heads are required. Peas also will be greatly benefited by weekly doses of liquid manure as soon as the pods have set.

Thin out root crops, such as carrot, turnip, beet, radish, etc., giving each plant sufficient space for full development. All root crops should be sown in rows, as then both thinning out and weeding are more easily done, and the hoe can be used with much more effect.

Celery should be earthed up as it becomes ready for the process, taking care to keep the soil out of the heart of the plant and promote unchecked growth by frequent supplies of liquid manure.

Cos lettuce will be much improved by tying up for blanching. Strips of raffia should be used for this purpose, as they are soft and will not cut through the leaves. Soak in water a few minutes before using.

Dig over any vacant pieces of ground that are to lie fallow during the winter, leaving them as rough as possible in ridges.

### **FLOWER GARDEN.**

Sow in boxes in a well-sheltered position *Bellis perennis* (double daisy), carnation, cowslip, delphinium, forget-me-not, hollyhock, pansy, pentstemon, polyanthus, and primrose. The boxes must have plenty of drainage and be filled with nice sandy soil to within two inches of the top, and care should be taken that they are placed perfectly level and raised on bricks or stones. Very careful treatment is required in the matter of watering fine seeds sown in this way, as failures are generally caused by want of attention in this respect.

Where the frost is not too severe in the winter, all varieties of hardy annuals may still be sown in the open for spring and early summer flowering.

Towards the end of the month dahlias and chrysanthemums may be cut down. Dahlia tubers may be either left in the ground and covered over with a little litter or be taken up and stored away till spring in dry sand or soil. Where moles are troublesome it is not advisable to leave them in the ground. After cutting down the old stems of chrysanthemums, the ground should be forked over all round the roots and the whole covered with a mulch of old decayed manure or litter for the winter. In the spring they will send up a lot of young shoots, from which cuttings may be taken; after which the old stools should be lifted, divided and replanted in fresh soils. In any case they should never be left in the same ground a second season, as is frequently the case, throwing up a mass of weakly stems and producing miserable blooms when the flowering season comes round. From divided roots some varieties will attempt to bloom during the summer, but these should be cut down close to the ground in December; in fact, most of these plants will require to be cut down about that time. They will then throw up fresh flowering stems for flowering at the proper season in the autumn.

The plants grown from cuttings will not require this treatment, as they do not get the same start, but flower naturally at the right time.

---

A statement published in the *Transvaal Government Gazette* gives the financial situation of the Transvaal Land and Agricultural Bank on the 31st March, 1908. On that date the advances on mortgage amounted to £114,800 as fixed loans and £37,514 17s. 3d. as instalment loans. No advances had been made to co-operative societies and on security of other than immovable property.

---

The Government of the Orange River Colony are recommending the use of a caustic soda and sulphur dip for the eradication of scab, and the dip is also finding favour with the Cape farmers. It is claimed for this dip that it is very efficacious, easily prepared, and has the advantage of being very cheap. It has been approved of and recommended by the Government stock inspectors, and the Chief Scab Inspector of the Cape Colony (Mr. A. G. Davidson) has admitted its value.

## Agricultural Conditions in March.

### WEATHER, CROPS AND LIVE STOCK.

IN most parts of the Colony the rainfall conditions in March were good, but from some districts come reports of insufficient rain, such as, for example, Pinetown, Bergville, Nel's Rust, Muden, Camperdown (again reported as "bad"), Wyford, Weenen, Richmond, Bester's, Utrecht, Nqutu, Melmoth, and Kambula. In the Utrecht district a fair amount of rain fell towards the end of March, but it was too late to save the mealie and mabele crops. The Beaumont district is badly in want of rain; there has not been a good rain since December, and most of the spruits are dry. In consequence, the mealies in that district will be considerably short of last season's crop; and winter crops, such as forage, potatoes, and rape, will be light unless there is a good rain shortly.

Hailstorms are, of course, decreasing in number and vigour, and there are few to report this month. The data we have received are as follows:—

*Greytown*.—Three storms. *Duration*: 1st and 3rd, 10 minutes; 2nd, 30 minutes. *Damage*: Considerable to mealies and other crops. *Direction*: West to east.

*Krantzkop*.—Two storms, on 27th and 30th March. *Duration*: 1st, 10 minutes; 2nd, 5 minutes. *Damage*: Little. *Direction*: West to east.

*Reit Vlei*.—Two storms. *Duration*: Ten minutes. *Damage*: Very little. *Direction*: South-west to north-east.

*Olivier's Hoek*.—Two storms. (a) On 7th March. *Duration*: Ten minutes. *Damage*: None. (b) On 8th March. *Duration*: Thirty minutes. *Damage*: Considerable to Kafir corn, but not as much to mealies—only in one or two cases were mealie crops destroyed. *Direction*: South-west to north-east.

*Ladysmith*.—Two storms. *Duration*: Short. *Damage*: Very little. *Direction*: North.

*Glencoe*.—One storm, on 14th. *Duration*: A few minutes. *Damage*: None. *Direction*: North-east.

*Vryheid*.—One storm, on 31st. *Duration*: Thirty minutes. *Damage*: None. *Direction*: West to east.

In the Dannhauser district furious gales of cold west winds have done enormous damage to crops, and were followed by frost on the night of the 10th April. The prospects of a fair harvest are in many cases *nil*.

The prospects of the mealie crop are discussed elsewhere in this



issue. It will be seen that the indications are of a harvest somewhat above the average. Since that article was put in print further reports have been received, and from a rapid glance through these it does not appear that the crop will be very much above the average. In our next issue the estimates already made will be revised where needed. The prospects of the potato crop remain good. Farmers have started putting in their winter crops; and in the Bester's district they are trying wheat in addition to forage, which has hitherto been the only crop put in. Our Bester's correspondent further informs us that the overberg farmers have been burning off the veld in order to have young grass for their sheep in May. The wattle bark conditions continue very satisfactory. More land has lately been put under wattles, particularly in the Mid-Illovo district, where another syndicate has been started at Stony Hill. Four hundred acres of land have been broken up and planted for this concern. Those interested in fibre will be glad to hear that in the vicinity of Imbizana (*via* Port Shepstone) a large number of young plants are still being planted out.

The live stock market is practically stagnant, as a result of the existence of East Coast Fever. Some of the districts, too, are overstocked with hamels, for which there is no market. Our Utrecht correspondent reports that at a recent sale hamels averaging 50 to 60 lbs. fetched 20s. each. The prices of butter and eggs have advanced and those for milk are also good. Prices of poultry have remained much the same as those of the previous month.

The proximity of East Coast Fever seems to be affecting everything and preventing farmers from launching out in any direction. Those with any cash are, in many districts, putting it into fencing to try and save their cattle. Dipping tanks are also being put up in several districts.

---

A new departure has lately been made to find an outlet for Victorian live stock. In January, Mr. George Howat shipped forty stud Ayrshire heifers and five bulls to Calcutta. The consignment is the result of inquiries made by the Indian Government through the Victorian Department of Agriculture. Only a short time was given for the selections of the animals, but a very representative lot of high-class cattle were got together. The heifers are all carrying their first or second calf, and the bulls are from a year to two years and a half old.

## South African Markets.

THE prices of live stock and animal produce, realised on the principal South African markets during the month of March-April, averaged as follows:—

### NATAL.

#### PIETERMARITZBURG.

The Market Master has furnished the following prices realised on the Maritzburg market during the month:—

*Live Stock.*—Fowls, 1s 6d; ducks, 2s; turkeys: cocks 7s 6d, hens 4s 6d; guinea fowls, 3s; rabbits, 1s 6d.

*Animal Produce.*—Bacon, 8d per lb; ham, 10d per lb; lard, 9d per lb; pork, 4d per lb; brawn, 6d per lb; eggs, 2s 6d per dozen; butter, 1s 6d per lb; cheese, 9d per lb.

*Vegetable Produce.*—Barley, 8s per 100 lbs; beans, 12s per 100 lbs; buckwheat, 10s per 100 lbs; earth nuts, 8s per muid; hay, 25s per ton; amabele, 8s per 100 lbs; lucerne, 3s 6d per 100 lbs; mealies, 5s per 100 lbs; Japanese millet, 4s per 100 lbs; oats, 7s per 100 lbs; onions, 16s per 100 lbs; peas, 12s per 100 lbs; potatoes, 3s 6d per 100 lbs; sweet potatoes, 3s per muid; wheat, 10s per 100 lbs; wattle wood, per 100 lbs: cut 8½d, uncut 6d; apples, 5s per 100; pears, 2s per dozen; bananas, 1s per 100; oranges, 1s per 100; lemons, 1s 6d per 100; peaches, 2s per 100; pine-apples, 1s 3d per dozen; grapes, 3d per lb.

#### DURBAN.

The Market Master reports the following average prices realised during the month ended 16th April:—

*Live Stock and Animal Produce.*—Sucking pigs, 5s 6d; fowls, 1s 7d; ducks, 2s 6d; turkeys, 6s; rabbits, 1s; bacon, 7d per lb; ham, 8d per lb; eggs, 2s per dozen; butter, 1s 4d per lb.

*Vegetable Produce.*—Earth nuts, 15s per muid; mealies, 9s per muid; potatoes, 6s 6d per muid; bananas, 9d per 100.

### CAPE COLONY.

The following information has been compiled from the last available report of the Cape Superintendent of Agricultural Co-operation (for the week ended 11th April):—

#### *Live Stock and Animal Produce.*

The following prices are quoted:—Fowls: Small 9d to 1s 1d, medium

1s 2d to 1s 10d, large 2s 3d; ducks: medium 1s 7d to 2s 3d, large 2s 6d to 2s 9d; turkeys: hens (small) 3s to 4s, hens (large) 4s 6d to 5s, cocks (medium) 4s to 5s 6d, cocks (large) 6s to 9s; geese: medium 1s 11d to 2s 6d, large 2s 6d to 3s 4d; eggs, per 100: fresh 14s to 16s, not guaranteed 9s to 12s; ostrich eggs, 1s each; butter (best) 1s 5d to 1s 6d wholesale, 1s 8d to 1s 9d retail; Cheddar cheese, 9d to 10½d per lb, delivered Capetown.

*Vegetable Produce.*

During the past week there have been numerous inquiries for barley, rye, oats, and lucerne. Sales have been effected in seed oats and oathay. In every direction the market remains very firm, with the exception of oats, which show a slight weakness, owing to all the Australian orders having been executed.

Oathay.—There appears to be a general movement in this article, and a further advance may shortly be looked for.

Mealies.—A further rise has taken place in the Natal market in yellow mealies, which should be maintained until the new season's crops arrive.

Wheat.—Remains unchanged.

Rye and Barley.—The market is very firm in both lines, and buyers are still inquiring in this direction.

Lucerne.—There is a general scarcity of lucerne, and prices are very strong.

The following prices are recorded in respect of the week under review:

Colonial wheat, per 200 lbs: Caledon 1st, 20s 6d to 20s 7½d; Malmesbury, 20s 6½d to 21s; Moorreesburg, 20s 10½d to 21s; Porterville-road, 21s to 21s 6d.

Colonial oats, per 150 lb: Caledon 1st, 7s 8d to 7s 10d; Moorreesburg, 7s 11d to 8s; Malmesbury, 7s 11d to 8s; main line, 8s to 8s 3d.

Colonial barley, per 150 lbs: Moorreesburg, 8s 9d to 9s; main line, 9s to 9s 6d; Caledon, 8s 6d to 8s 9d.

Bran, per 100 lbs: 5s 4½d to 5s 6d.

Colonial rye, per 200 lbs: 14s 6d to 15s, country stations.

Kafir corn, per 200 lbs: 18s 6d to 19s, delivered buyer's store.

Mealies, per 200 lb, *ex* stores, Capetown: Natal yellows, 14s 6d to 14s 9d; O.R.C. small yellows, 14s 9d to 15s; Natal white coast, 12s 6d to 12s 9d.

Colonial lucerne hay, per 100 lbs: 4s 9d to 5s, *ex* stores, Capetown.

Colonial oathay, per 100 lbs: 3s to 3s 1½d; main line stations, 2s 11d to 3s

Colonial fodder, per 100 lbs: Corn chaff, 3s, Moorreesburg and Malmesbury,; 4s 6d to 4s 9d, *ex* stores, Capetown; 1s 6d to 1s 7d, main line stations; 1s 5d to 1s 6d, Moorreesburg and Malmesbury.

Vegetables and Fruit.—Potatoes are a short supply, and best Early Rose are meeting with a ready sale at prices quoted: firsts 13s 6d to 16s,

seconds 7s 6d to 11s per bag; onions are also a short supply and firm at 8s 6d to 9s 6d per bag, second quality 5s to 7s per bag; beans (Natal and sugar), 30s to 32s 6d per bag; limes, 1s 6d to 5s per 100; bananas, 11s to 15s (choicest, 17s. to 21s.) per case of 800 to 1,000; pineapples (E.P.), per 100: small 4s, medium 4s 6d, large 5s to 6s 6d per 100; oranges, new Capes, coming to hand in green condition, selling at 9d to 1s 9d per 100; apples: best are in demand, 4s 6d to 9s per 100, seconds, 2s 6d to 4s per 100, small 9d to 2s per 100.

#### KIMBERLEY.

Messrs. Jas. Lawrence & Co., Ltd., report as follows relative to the Kimberley market on the 17th April:—

There is a large supply of white Kafir corn arriving, prices dropping from 14s to 9s in a few days. New season's mealies in small quantities offering, price firm. Quantities of oats, meal and wheat arriving from the Orange River Colony; demand at present limited. Potatoes continue firm. Onions in good demand. Fresh eggs find ready sale. Butter in demand. Poultry in good supply. Fruit and vegetables find ready sale. Little doing in live stock. The following prices are quoted:—

*Live Stock.*—Oxen (good) prime, 600 lbs upwards, £9 to £12; cows (good) 450 lbs upwards, £5 10s to £8; calves, 4d per lb dead weight; pigs, 100 lbs (clean) 2½d, 3d per lb live weight; lambs, 30 lbs, 8s to 10s; hamels, 40 lbs to 45 lbs, 10s to 13s 6d; Cape sheep (good), 10s to 13s 6d; kapaters (good), 10s to 13s 6d; oxen, trek, £6 to £7; riding horses, £10 to £25; draught horses, £10 to £22 10s; mares, £9 to £20 10s; fowls, 9d to 1s 4d; turkeys, 3s to 5s 6d.

*Animal Produce.*—Butter: fresh 1s to 1s 2d, second quality 7d to 10d per lb; eggs 1s 6d to 2s per dozen; hams and bacons, 4d to 6d per lb.

*Vegetable Produce.*—Bran, 6s 6d to 7s per bag 100 lbs; barley, 7s 6d to 10s per bag 163 lbs; beans, per bag 203 lbs: sugar 30s to 35s, Kafir 10s to 15s; chaff, per bale 4s 6d to 9s 6d, pressed per 100 lbs 3s to 3s 6d; forage, per 100 lbs: good 4s to 5s, inferior 2s 6d to 3s 6d; Kafir corn: African mixed 12s to 15s, white 14s to 14s 6d; Boer meal: unsifted 23s to 25s 6d, sifted 25s 6d to 27s 6d; mealies, per 203 lbs: yellow 9s to 10s, white 9s to 10s; mixed 8s 6d to 9s 6d; white mealie meal, 10s to 11s per 183 lbs; oats, 9s to 9s 6d per bag 150 lbs; lucerne hay, 3s 6d to 4s 6d per 100 lbs; onions, 11s to 14s per bag 120 lbs; potatoes, 8s to 16s per bag 163 lbs; tobacco: good 4d to 7d, inferior 1d per lb; wheat, 17s 6d to 20s per bag 203 lbs: dried peaches, 2d to 4d per lb; dried apricots, 2d to 4d per lb; pineapples, 5d to 9d per dozen.

#### ORANGE RIVER COLONY.

#### BLOEMFONTEIN.

The following prices were, according to the *Post*, realised on the Bloemfontein market on Saturday, 11th April:—



*Live Stock and Animal Produce.*—Fowls, 1s to 1s 4d; ducks, 1s 3d to 1s 6d; geese, 4s to 5s; turkeys, 2s to 7s 6d; dressed fowls, 1s 6d to 1s 9d each; eggs, 1s 6d to 2s per dozen; butter, 1s to 1s 4d per lb; mutton: per hind quarter 3s 6d to 5s, per fore quarter 2s to 3s; pork, 6d per lb; beef, 6d per lb.

*Vegetable Produce.*—Oat hay, 3s 6d to 5s per 100 lbs; chaff, 5s to 6s per bale; Kafir corn, 12s 3d to 13s 6d per bag; mealies, 9s 6d to 10s 6d per bag; barley, 5s 6d to 6s 6d per bag; bran, 6s to 6s 6d per bag; seed oats, 8s to 11s per bag; onions, 5s to 11s per bag; potatoes, 5s 6d to 11s per bag; pineapples, 1s to 1s 6d per dozen; apples, 2s 6d to 5s per 100; quinces, 5s to 10s per 100.

## TRANSVAAL.

### JOHANNESBURG.

Mr. Alfred Webb, produce agent to the Cape Government, P.O. Box 2342, Johannesburg, reports the following prices realised on the Johannesburg market during the week ended 16th April:—

*Live Stock.*—Good demand for heavy Boer goats and small fat pigs. Boer goats, 10s to 19s; donkeys, £6 to £7 5s; oxen: slaughter £9 to £12 10s, dressed £1 7s 6d to £1 12s per 100 lbs; pigs, 3d to 4d per lb live weight; sheep: slaughter lambs 12s to 21s, dressed 4d to 4½d per lb; ducks, 1s 6d to 2s 6d; fowls, 1s to 2s 8d; geese, 3s 9d to 7s; turkeys: cocks 5s to 14s, hens 2s 3d to 5s.

*Animal Produce.*—Good demand for butter and eggs. Prices: Butter, 10d to 1s 3d per lb; eggs, per dozen: new laid 2s 6d to 5s, fresh 1s 3d to 2s.

*Vegetable Produce.*—Bran, 8s to 8s 6d per 100 lbs net; barley, 8s 9d to 10s 3d per 150 lbs net; beans (dry), 10s to £1 9s per 200 lbs net; Boer meal, £1 4s to £1 7s per 200 lbs net; forage, 4s 6d to 6s 6d per 100 lbs; Kafir corn, 10s 6d to 14s per 200 lbs net; lucerne (dry), 4s 9d to 6s per 100 lbs; manna, 3s to 4s 3d per 100 lbs; mealies, per 200 lbs net: white 8s to 9s 6d, yellow 8s 6d to 9s 6d; onions, 13s to 15s per 120 lbs net; seed oats, 8s 3d to 10s per 150 lbs net; potatoes, per 150 lbs net: best 11s 6d to 15s, medium 6s to 11s; sweet potatoes, 4s to 7s per 150 lbs net; wheat, 14s 3d to 17s per 200 lbs net; bananas, 1s 6d to 2s 6d per 100; oranges, 2s 6d to 7s per 100; pineapples, 1s to 2s per dozen. Good demand for apples, pears, lucerne, mealies, onions, and best quality potatoes.

### PRETORIA.

The Commercial General Agency Co., Ltd., Box 784, Pretoria, report the following average prices realised on the Pretoria market during the month ended 15th April:—

*Live Stock.*—Turkeys, 4s 6d to 12s 6d; fowls, 1s 4d to 2s 2d; ducks, 1s 4d to 3s; Muscovies, 1s 6d to 2s 6d.

*Vegetable Produce.*—Forage, per 100 bundles: best 12s 6d to 19s 6d, medium 5s 6d to 10s 9d, per bale 2s 6d to 5s 6d; potatoes: best 12s to 15s 9d; medium 8s to 11s; sweet potatoes, 3s 6d to 4s 6d; bran, 7s 9d to 9s 6d; mealies: white 9s to 10s, yellow 9s 6d to 10s 6d; manna, 2s to 5s 3d per 100 bundles; wheat, 17s 6d to 19s 6d per 203 lbs; lucerne, 2s to 2s 6d per bale; tobacco, per roll 3½d to 9d, per lb. 1½d to 2½d; onions, 10s to 12s 6d per bag; earth nuts, 9s to 10s 6d.

---

## **The Oversea Maize Market.**

---

### THE POSITION IN MARCH.

---

THE London maize market during March was, generally speaking, satisfactory. It was distinctly firmer than it had been during the preceding month, and prices rose as the month advanced. This improvement was the result of less favourable reports regarding the probable outturn of the Argentine crop, of America's failure to ship with any freedom, and of a growing disposition on the part of the Continent to buy.

During the week ended 6th March no business took place in new crop La Plata cargoes, the offers of which were remarkably small for the time of the year; 23s 6d was asked for April-May shipment, with about 23s 3d obtainable, as compared with 21s 6d at the same date of last year. Two cargoes of Bess-Gal-Fox for March shipment were, however, sold at 26s per 492 lbs. Parcels for London met with a fair demand at 6d to 9d advance on the week, 24s 9d being paid for mixed American March shipment, and 24s 10½d being bid for afloat parcels. During the following week 24s 4½d was paid for an April cargo; Danubian-Galat-Foxanian cargoes, prompt shipment, sold early in the week at 25s 9d to 26s per 480 lbs. On the 19th March the bids for cargoes of La Plata were 25s 6d for March shipment, 24s 3d for April, 24s for May 10th, 23s 9d for May, and 23s 6d for June, July and August shipment. *Beerbohm's List* remarks that the fact that new crop maize is offered for March shipment indicates a very early crop in the North, but that, at the same time, a precocious crop seldom means a large yield. The *List's* correspondent cabled on the 20th March that the harvest had commenced in

the North, viz., in Sante Fe, where there had been a prolonged drought and where rather more than a third of the crop is produced. He also stated that local rains had been beneficial in other parts, doubtless for the late-sown crop in Buenos Aires Province, where about half of the maize crop is produced. The official estimate of the crop in the various Provinces, recently issued, was as follows:—Buenos Aires, 1,670,000 tons; Santa Fe, 1,370,000 tons; others, 415,000 tons—total, 3,455,000 tons, or 15,825,000qrs, on an estimated area of 7,272,000 acres; the area under the previous crop was 7,043,000 acres, whilst 12 years ago, in 1895, the area was only 3,078,000 acres. The exports in 1907 are given as 1,296,000 tons, including 915,000 tons for the United Kingdom and orders, and the remainder for Continental countries; in 1906 the total was 2,611,363 tons, the largest on record, and in 1905 it reached 2,277,734 tons.

In America, the *List* states, the position of maize is regarded as very strong; the receipts are very small, and the visible supply continues to decrease, whilst the export movement since the season commenced has been far below expectations, although prices may be regarded as having been quite attractive; it is obvious, therefore, that supplies of maize in the interior are quite limited, and not in excess of the ordinary home demand; we learn, in fact, that prices in the interior were higher than at the shipping ports a week ago. Shipments invariably become small after March, because of the germinating season and the difficulty of obtaining corn in fit condition for shipment unless dried by artificial means. During the week ended 20th March, Mixed American corn ex-ship was sold in Mark Lane at 25s 6d to 25s 9d, as compared with 19s 9d at the same time last year; whilst for March shipment 25s 6d c.i.f. was asked and for April-May 24s 9d was paid.

In its issue of the 27th March the *Evening Corn Trade List* says: "America has disappointed all expectations in regard to her exports of maize, and Roumania and Russia have failed to make up her shortcomings; thus we find that the average weekly shipments to Europe did not exceed 250,000qrs, of which only 85,000qrs per week were destined for the United Kingdom; this latter total represents only about 40 per cent. of our normal requirements; the quantity afloat for the United Kingdom is only 185,000qrs, whilst the average at this season is over 500,000 quarters; the same is the case in regard to the amount afloat for Continental countries; this is 345,000qrs compared with a previous five years' average of 650,000qrs."

Fair quantities of African maize have been arriving; and on the 20th March the *List* reported that the value of the best was about 26s 3d ex-store.

The general statistical position of maize on the 27th March was as follows:—

|                                                |     |     | 1907-8—qrs. | 1906-7—qrs. | 1905-6—qrs. |
|------------------------------------------------|-----|-----|-------------|-------------|-------------|
| On passage to U.K.                             | ..  | ... | 185,000     | 525,000     | 475,000     |
| " " Cont.                                      | ... | ... | 345,000     | 425,000     | 585,000     |
| Imports into U.K. for the 12 weeks ending      |     |     |             |             |             |
| March 21                                       | ... | ... | 2,008,600   | 2,932,100   | 3,087,300   |
| Visible supply in U.S. ( <i>Bradstreet's</i> ) |     |     | 1,449,000   | 2,523,600   | 2,427,500   |
| American crop                                  | ... | ... | 295,000,000 | 340,000,000 | 316,000,000 |
|                                                |     |     | 1908.       | 1907.       | 1906.       |
| New York, Spot                                 | ... | ... | 69c         | 52½c        | 51½c        |
| Mark Lane, Mixed Amer. ex-ship                 | ... | ... | 26/-        | 20/9        | 19/-        |

## SHIPMENTS OF MAIZE TO EUROPE FROM JANUARY 1ST TO DATE.

|               | 1908.<br>U.K.* | 1908.<br>Cont. | 1907.<br>U.K.* | 1907.<br>Cont. | 1906.<br>U.K.* | 1906.<br>Cont. |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
|               | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           |
| America ...   | 979,000        | 1,062,000      | 1,626,000      | 1,425,000      | 2,392,000      | 3,666,000      |
| Argentina ... | 132,000        | 169,000        | 333,000        | 323,000        | 165,000        | 264,000        |
| Russia ...    | 175,000        | 347,000        | 372,000        | 367,000        | 30,000         | 77,000         |
| Danube, etc.  | 369,000        | 452,000        | 219,000        | 306,000        | 50,000         | 108,000        |
| Total ...     | 1,655,000      | 2,010,000      | 2,550,000      | 2,425,000      | 2,645,000      | 4,115,000      |

\* Includes shipments for orders.

Germany has a wider acreage under potatoes than any other country in Europe. More than 8,000,000 acres are annually devoted to the crop, and the production, according to the season, varies from 40,000,000 to 45,000,000 tons. As a rule the crop is a profitable one in that country, the result in this respect depending to a considerable extent on the price of labour, on the value of the tubers for the manufacture of spirit and starch, and in the pig-feeding industry. It is estimated that about 7 per cent. of the crop is bought by the spirit factories, 3 per cent. for the manufacture of starch, and 44 per cent. is used as pig-food. It is difficult to estimate the quantity employed as human food, but it has been calculated that the yearly consumption is 4 to 5 lb. per head of the population.



## Coal and Labour Return.

Return of Coal raised and Labour employed at the Natal Collieries for the month of March, 1908:—

| Name of Colliery.        | Average Labour Employed. |     |       |               |       |       |                     |     |     | Output.    |    |
|--------------------------|--------------------------|-----|-------|---------------|-------|-------|---------------------|-----|-----|------------|----|
|                          | Above Ground.            |     |       | Below Ground. |       |       | Unproductive Work.* |     |     | Tons. Cwt. |    |
|                          | E.                       | N.  | L.    | E.            | N.    | L.    | E.                  | N.  | L.  |            |    |
| Natal Navigation ..      | 39                       | 99  | 283   | 21            | 352   | 259   | 3                   | 4   | 2   | 28,589     | 15 |
| Elandslaagte ..          | 24                       | 25  | 320   | 21            | 301   | 530   | 3                   | 35  | 4   | 20,652     | 14 |
| Dundee Coal Co. ..       | 26                       | 21  | 210   | 17            | 235   | 367   | 1                   | 1   | 33  | 20,219     | 0  |
| Durban Navigation ..     | 27                       | 168 | 47    | 14            | 453   | 72    | 1                   | 10  | —   | 17,199     | 0  |
| Natal Cambrian ..        | 16                       | 46  | 183   | 11            | 393   | 97    | 3                   | 1   | 6   | 14,078     | 2  |
| St. George's ..          | 19                       | 110 | 108   | 14            | 376   | 144   | —                   | —   | —   | 13,908     | 2  |
| Newcastle ..             | 12                       | 47  | 29    | 8             | 423   | 3     | —                   | —   | —   | 7,618      | 0  |
| South African ..         | 11                       | 8   | 78    | 7             | 120   | 60    | 4                   | 17  | 21  | 7,305      | 2  |
| Natal Steam Coal Co. ..  | 3                        | 82  | 3     | 3             | 215   | 7     | —                   | 16  | 5   | 4,648      | 13 |
| Talana (Natal) ..        | 7                        | 55  | 22    | 5             | 182   | 47    | —                   | 2   | —   | 4,116      | 5  |
| Ramsay ..                | 4                        | 11  | 40    | 5             | 151   | 111   | 1                   | 2   | 3   | 3,167      | 11 |
| West Lennoxton ..        | 5                        | 3   | 61    | 42            | 36    | 102   | —                   | —   | —   | 2,930      | 13 |
| Central ..               | 6                        | 48  | 16    | 6             | 204   | 102   | —                   | —   | —   | 2,324      | 19 |
| Zululand ..              | 5                        | 40  | 3     | 4             | 101   | 7     | —                   | —   | —   | 2,021      | 10 |
| Ballengeich ..           | 1                        | 20  | 14    | 1             | 49    | —     | 9                   | 81  | 30  | 572        | 9  |
| Woodlands ..             | 2                        | 8   | 9     | 2             | 11    | 10    | —                   | —   | —   | 277        | 0  |
| Vryheid ..               | 1                        | 2   | —     | 1             | 2     | —     | —                   | —   | —   | 21         | 0  |
| Vaalbank ..              | —                        | —   | —     | 1             | 3     | —     | 1                   | 3   | —   | 9          | 0  |
| Nooitgedacht ..          | —                        | 2   | —     | 1             | 2     | —     | —                   | —   | —   | 4          | 0  |
| Dumbi Mountain ..        | —                        | 3   | —     | —             | —     | —     | —                   | —   | —   | 2          | 0  |
| Totals ..                | 208                      | 798 | 1,426 | 184           | 3,639 | 1,968 | 26                  | 172 | 104 | 149,664    | 13 |
| Corresponding month, '07 | 156                      | 701 | 1,445 | 114           | 2,730 | 1,503 | 34                  | 154 | 125 | 104,344    | 3  |

\* Cost charged to Capital Account.

Mines Department, Maritzburg,  
7th April, 1908.

CHAS. J. GRAY,  
Commissioner of Mines.

Return of Coal bunkered and exported from the Port of Durban for the month of March, 1908:—

|                  | Tons.   | Cwt. |
|------------------|---------|------|
| Bunker Coal* ... | 58,868  | 7    |
| Exported to:—    |         |      |
| East London ...  | 508     | 12   |
| Algoa Bay ...    | 3,297   | 9    |
| Cape Town ...    | 14,357  | 5    |
| Lobito Bay ...   | 197     | 6    |
| London ...       | 1,092   | 6    |
| Beira ...        | 675     | 12   |
| Tanga ...        | 34      | 15   |
| Tulear ...       | 777     | 14   |
| Mauritius ...    | 3,913   | 5    |
| Bombay ...       | 8,924   | 1    |
| Singapore ...    | 3,577   | 9    |
| Karachi ...      | 5,071   | 7    |
| Total ...        | 101,295 | 8    |

\* Including 1,658 tons 4 cwt. taken by H.M. Warships and Transports.

Custom House, Port Natal  
1st April, 1908.

GEO. MAYSTON,  
Collector of Customs.

## Meteorological Returns.

*Meteorological Observations taken at Government Stations for Month of March, 1908.*

| STATIONS.         | TEMPERATURE (IN FAHR. DEGS.). |         |                    |                    | RAINFALL (IN INCHES). |              |                              |      |                                     |                                           |
|-------------------|-------------------------------|---------|--------------------|--------------------|-----------------------|--------------|------------------------------|------|-------------------------------------|-------------------------------------------|
|                   | Means for Month.              |         | Maximum for Month. | Minimum for Month. | Total for Month.      | No. of Days. | Heaviest rain-fall in 1 day. |      | Total for Year from July 1st, 1907. | Total for same per'd from July 1st, 1906. |
|                   | Maximum                       | Minimum |                    |                    |                       |              | Fall.                        | Day. |                                     |                                           |
| Observatory ..    | 81.2                          | 65.8    | 92.9               | 57.8               | 4.76                  | 13           | 2.17                         | 24th | 29.25                               | 30.91                                     |
| Stanger ..        | 85.3                          | 65.6    | 107                | 56                 | 4.02                  | 14           | 1.14                         | 13th | 38.87                               | 33.73                                     |
| Verulam ..        | 87.0                          | 65.0    | 105                | 57                 | 3.89                  | 10           | 2.11                         | 13th | 31.99                               | 31.66                                     |
| Greytown ..       | 79.4                          | 45.7    | 97                 | 35                 | 5.58                  | 15           | 2.31                         | 27th | 36.63                               | 31.52                                     |
| Newcastle ..      | 82.0                          | 55.8    | 97                 | 50                 | 4.32                  | 11           | 1.97                         | 26th | 36.26                               | 54.24                                     |
| Eastcourt ..      | 83.3                          | 55.2    | 99                 | 48                 | 3.54                  | 10           | .74                          | 27th | 27.07                               | 28.21                                     |
| Bulwer ..         | —                             | —       | —                  | —                  | 4.70                  | 21           | .72                          | 20th | 42.14                               | —                                         |
| Mid-Illovo ..     | 77.2                          | 58.1    | 101                | 50                 | 4.46                  | 20           | 1.42                         | 14th | 33.22                               | 36.74                                     |
| Camperdown ..     | 81.3                          | 57.1    | 98                 | 51                 | 1.65                  | 6            | .72                          | 14th | 25.14                               | 33.94                                     |
| Port Shepstone .. | 83.7                          | 52.4    | 89                 | 45                 | 5.61                  | 7            | 2.50                         | 23rd | 35.12                               | —                                         |
| Umzinto ..        | 89.0                          | 48.4    | 95                 | 45                 | 8.75                  | 8            | 4.84                         | 7h   | 34.25                               | 40.68                                     |
| Maritzburg ..     | 80.9                          | 57.9    | 100                | 49                 | 2.29                  | 16           | .60                          | 23rd | 31.80                               | 46.87                                     |
| Howick ..         | 79.6                          | 54.9    | 98                 | 47                 | 2.47                  | 14           | .55                          | 23rd | 34.40                               | 38.00                                     |
| Vryheid ..        | 83.4                          | 56.3    | 95                 | 49                 | 5.89                  | 10           | 1.50                         | 1st  | 34.74                               | 33.09                                     |
| Dundee ..         | 76.5                          | 65.7    | 85                 | 55                 | 4.14                  | 10           | 1.03                         | 26th | 28.35                               | 32.52                                     |
| Weenen Gaol ..    | 88.3                          | 56.2    | 102                | 52                 | 2.70                  | 15           | .73                          | 26th | 27.52                               | 27.56                                     |
| Impendhle ..      | 74.7                          | 50.0    | 90                 | 43                 | 4.47                  | 17           | 1.07                         | 3rd  | 37.38                               | 41.07                                     |
| New Hanover ..    | 82.0                          | 56.1    | 99                 | 47                 | 2.76                  | 16           | .95                          | 23rd | 35.79                               | 50.49                                     |
| Krantzkop ..      | 82.5                          | 54.0    | 91                 | 43                 | 3.14                  | 11           | .56                          | 27th | —                                   | —                                         |
| Charlestown ..    | 76.9                          | 49.6    | 89                 | 41                 | 4.78                  | 11           | 2.10                         | 27th | 27.82                               | 49.12                                     |
| Nongoma ..        | 78.1                          | 48.1    | 87                 | 40                 | 2.25                  | 5            | .90                          | 31st | —                                   | 38.54                                     |
| Ingwavuma ..      | 82.5                          | 59.1    | 90                 | 52                 | 4.40                  | 10           | 1.80                         | 15th | 28.22                               | —                                         |
| Mtunzini ..       | 85.6                          | 57.0    | 105                | 50                 | 2.87                  | 9            | .85                          | 1st  | 42.44                               | —                                         |
| Hlabisa ..        | 80.7                          | 63.1    | 90                 | 58                 | 3.23                  | 4            | 1.50                         | 29th | 29.38                               | 37.92                                     |
| Melmoth ..        | 80.2                          | 59.5    | 104                | 50                 | 3.01                  | 14           | .93                          | 1st  | 24.13                               | 33.65                                     |
| Ubombo ..         | 81.4                          | 61.5    | 95                 | 54                 | 4.45                  | 11           | 1.05                         | 17th | 30.90                               | 42.72                                     |
| Mahlabatini ..    | 81.4                          | 52.6    | 98                 | 47                 | 2.07                  | 8            | .62                          | 23rd | 25.05                               | 29.39                                     |
| Point ..          | —                             | —       | —                  | —                  | 5.16                  | 10           | 2.85                         | 23rd | 39.35                               | 32.40                                     |
| Empangeni ..      | 85.7                          | 62.8    | 98                 | 54                 | 3.72                  | 8            | 1.45                         | 13th | 37.02                               | 28.01                                     |
| Imbizana ..       | —                             | —       | —                  | —                  | 7.01                  | 12           | 1.90                         | 14th | 36.77                               | —                                         |

*Meteorological Observations taken at Private Stations for Month of March, 1908.*

| STATIONS.                        | TEMPERATURE (IN FAHR. DEGS.) |                    | RAINFALL (IN INCHES). |              |                              |      |                                     |                                       |
|----------------------------------|------------------------------|--------------------|-----------------------|--------------|------------------------------|------|-------------------------------------|---------------------------------------|
|                                  | Minimum for Month.           | Maximum for Month. | Total for Month.      | No. of Days. | Heaviest rain-fall in 1 day. |      | Total for Year from 1st July, 1907. | Total for same period from July 1906. |
|                                  |                              |                    |                       |              | Fall.                        | Day. |                                     |                                       |
| Adamsburst (Wm. Adams) ..        | 94                           | 50                 | 2.28                  | 12           | 0.58                         | 23rd | —                                   | —                                     |
| Hilton ..                        | 93                           | 47                 | 2.43                  | 18           | 0.41                         | 23rd | 33.41                               | 43.05                                 |
| P.M.B., Town Bush Valley ..      | —                            | —                  | 4.03                  | 14           | 0.78                         | 28th | 42.71                               | 51.66                                 |
| Ottawa ..                        | —                            | —                  | 5.02                  | 11           | 1.85                         | 14th | 32.87                               | 32.06                                 |
| Mt. Edgecombe (Natal Estates) .. | —                            | —                  | 1.54                  | 9            | 1.59                         | 14th | 33.97                               | 37.03                                 |
| Cornubia ..                      | —                            | —                  | 1.13                  | —            | —                            | —    | 26.32                               | —                                     |
| Milkwood Kraal ..                | —                            | —                  | 2.27                  | —            | —                            | —    | 19.41                               | —                                     |
| Blackburn ..                     | —                            | —                  | 4.19                  | —            | —                            | —    | 22.38                               | —                                     |
| Saccharine ..                    | —                            | —                  | 3.21                  | —            | —                            | —    | 23.40                               | —                                     |
| Equeqfa (W. Hawkesworth) ..      | 93                           | 59                 | 8.50                  | 17           | 3.71                         | 7th  | 38.23                               | 44.84                                 |
| Umzinto, Beneva ..               | —                            | —                  | 8.54                  | 13           | 4.65                         | 6th  | 38.39                               | 12.08                                 |
| Umhlangeni ..                    | 92                           | 62                 | 6.51                  | 14           | 2.65                         | 23rd | —                                   | —                                     |
| Harden Heights ..                | —                            | —                  | 3.62                  | 13           | 0.72                         | 26th | —                                   | —                                     |
| Riet Vlei ..                     | —                            | —                  | 3.40                  | 10           | 1.55                         | 27th | 24.78                               | 28.91                                 |
| Dalton (Fawn Leas P.O.) ..       | —                            | —                  | 2.44                  | 13           | 0.65                         | 26th | 28.72                               | 34.14                                 |
| Bransholme ..                    | —                            | —                  | 6.19                  | 14           | 1.57                         | 26th | 59.93                               | 58.97                                 |
| Cedara—Hill Station ..           | 93                           | 47                 | 4.35                  | 15           | 2.06                         | 2nd  | —                                   | 36.19                                 |
| Cedara—Vlei Station ..           | 94                           | 44                 | 1.93                  | 11           | 0.50                         | 22nd | 28.82                               | —                                     |
| Winkel Spruit ..                 | 87                           | 57                 | 4.06                  | 15           | 1.15                         | 23rd | 31.75                               | 36.13                                 |
| Weenen ..                        | 99                           | 45                 | 2.96                  | 10           | 0.80                         | 26th | —                                   | —                                     |
| Giant's Castle ..                | 74.8                         | 53.8               | 5.60                  | 16           | 1.28                         | 17th | 26.97                               | —                                     |

# **Return of Farms at Present under Licence for Lung sickness and Scab.**

| STOCK INSPECTOR.    | DISTRICT.           | DISEASE.      | OWNER.                     | FARM.                    |
|---------------------|---------------------|---------------|----------------------------|--------------------------|
| A. P. Craw ..       | Ladysmith ..        | Scab          | W. M. Buys ..              | Ruit Kuil                |
|                     |                     | "             | F. Colling ..              | Klipdal                  |
|                     |                     | "             | H. N. Nel ..               | Catharine                |
|                     |                     | "             | J. van de Bosch ..         | Ruther Glen              |
| A. B. Koe ..        | Portion of Estcourt | Lung sickness | A. J. Good ..              | Mattwana's Ho k          |
|                     |                     | Scab          | F. R. Moor ..              | Greystones               |
|                     |                     | "             | H. L. Francis ..           | R- itfontein             |
|                     |                     | "             | J. H. Hatting ..           | Drief ntein              |
|                     |                     | "             | J. Guldenpfennig ..        | Bonheim                  |
| A. J. Marshall ..   | Dundee ..           | "             | Swana ..                   | Vaaipplaats              |
|                     |                     | "             | Messrs. Smith & Cartwright | Springfield and Thornley |
|                     |                     | "             | H. A. J. Davel ..          | Kliping                  |
| E. Varty ..         | Western Umvoti. .   | "             | T. C. Vermaak ..           | H- rri-tdale             |
|                     |                     | "             | T. J. Nel ..               | Mt. Kristia              |
| C. J. van Rooyen .. | Krantzkop ..        | Lung sickness | J. P. Van Rooyen..         | Underdunt                |
|                     |                     | "             | Maqamganse ..              | Loots Hoek               |
|                     |                     | "             | Uqupu ..                   | Myoniezwe's Locat'n      |
|                     |                     | "             | Ndabane ..                 | "                        |
|                     |                     | "             | S. Johnson & Co. ..        | Inadie Store             |
|                     |                     | "             | Ndabane ..                 | Myoniezwe's Locat'n      |
|                     |                     | "             | Natives ..                 | Myoniezwe's Locat'n      |
|                     |                     | "             | Amosi ..                   | "                        |
|                     |                     | "             | Umbag'iza ..               | Keat's Drift             |
| A. H. Ball ..       | Weenen ..           | Scab          | Nyongas ..                 | Myoniezwe's Locat'n      |
|                     |                     | "             | R. J. J. van Rooyen        | Bird Spruit              |
|                     |                     | "             | P. H. van Rooyen..         | Buffels Hoek             |
|                     |                     | "             | J. S. Els ..               | Scotsburg                |
|                     |                     | "             | Gangaza and others         | Buffels Hoek             |
|                     |                     | "             | G. J. van de West-huyzen   | Tiger Kloof              |
| J. Stewart ..       | Bergville ..        | Lung sickness | Mrs. A. Hair & Sons        | Oribe Vlake              |
|                     |                     | "             | Macomfi ..                 | Woodford                 |
|                     |                     | "             | Neli ..                    | Rustenburg               |
|                     |                     | "             | O. Zunkel ..               | "                        |
|                     |                     | "             | Mjati ..                   | Loskop                   |
|                     |                     | "             | H. Reid ..                 | Loskop                   |
|                     |                     | "             | Adambambi ..               | Driefontein              |
| D. Williams ..      | Utrecht ..          | Scab          | J. B. Davis ..             | Driefontein              |
|                     |                     | "             | H. W. S holtz ..           | "                        |
|                     |                     | "             | B. Steenkamp ..            | Holktrans                |
| H. Van Rooyen ..    | Bal'anango ..       | "             | Mhome ..                   | Paardeplaats             |
| J. C. Speirs ..     | Impendhrie ..       | "             | Pinda, Vete & Sobuon       | Furth                    |
| A. Brown ..         | Polela & Underberg  | "             | H. A. Robinson ..          | Manston's Court          |
|                     |                     | "             | J. Fell ..                 | Dunvia                   |
|                     |                     | "             | H. Blaikie ..              | Inchgarth                |
| L. Trenor ..        | Harding ..          | Lung sickness | Hitchins Bros. ..          | Thleku                   |
|                     |                     | Scab          | Mak'la and Jimbela         | Location                 |
| A. Hair ..          | City and Ungeni ..  | "             | Jantje and others ..       | L cation                 |
|                     |                     | "             | Umveli ..                  | "                        |
| B. Klusener ..      | Port Shepstone ..   | Lung sickness | G. Daddy ..                | Sugar Bush Cutting       |
|                     |                     | "             | Mes'ash ..                 | Umtamvuna River          |
|                     |                     | "             | R. Zondi ..                | Elongas                  |
|                     |                     | "             | Mogob ..                   | Near Umtamvuna           |
| E. Boast ..         | New Hanover ..      | Scab          | C. J. Dickens ..           | Noodsberg                |
|                     |                     | "             | Parker Bros. ..            | Tetworth                 |
| A. S. Parkinson ..  | Lions River ..      | "             | W. M. Henderson ..         | Hilton                   |
|                     |                     | "             | Robt. Speirs ..            | Moyeni                   |

## **MANGE IN HORSES EXISTS AS UNDER.**

| Owner.                  | District. | Owner. | District. |
|-------------------------|-----------|--------|-----------|
| Pinda, Vete & Sobuon .. | Impendhle | —      | —         |

## **Brands Allotted to Infected Magisterial Divisions.**

The following is a list of the brands which have been allotted to the several infected Magisterial Divisions:—Durban County, D. 2; Alexandra County, A. 2; Lower Tugela, T. 2; Mapumulo, S. 2; Inanda, B. 2; Umsinga, U. 2; Dundee, X. 2; Vryheid, V. 2; Ngotshe, H. 2; Paulpietersburg, P. 2; Nongoma, G. 2; Mahlabatini, L. 2; Ndwedwe, N. 2; Weenen County, W. 2; Umvoti, F. 2; Hlabisa, K. 2; Eshowe, E. 2; Ladysmith, R. 2; Babanango, O. 2; Ladysmith, East of Line outside infected area, R 3, Utrecht, Z. 2; Krantzkop, 2 K; Umvoti Location, 2 F; Ladysmith, West of main line of Railway, R 3 on left neck; Pietermaritzburg City, 2 P; Umlazi Location (Upper Umkomanzi portion), 2 U.

## **Pound Notices.**

NOTIFICATION is contained in the *Government Gazette* of the sale, unless previously released, of the undermentioned live stock on the dates specified:—

### **ON THE 6TH MAY.**

*Bulwer*.—(1) Brown ewe goat, slit left ear, with black kid. (Impounded by Native Babayaan, Bulwer Location). (2) Ewe sheep, old, half moon left ear, slit top of right ear. (Impounded by Mrs. Birkett, "Tatton," Polela).

*Dundee*.—Bay mare, about 3 years old, black points, about 14 hands, long mane and tail, branded C near rump. (Running on the farm "Grantbam," Glencoe Junction, and reported by Mr. C. W. Whysall as being too wild to be driven to the Pound.)

*Finchley*.—(1) Black sow pig, right ear torn by dogs. (2) Black hog pig, stump tail. (3) White sow pig, two black patches on head, hole in right ear, stump tail. (4) Black sow, cut behind left ear.

*Meran* (Waschbank).—Bay mare, black points, scanty tail and mane, aged, faint brand like diamond on left hip, pearl in right eye, sore mouth, marks of barbed wire on flanks, wild, and shy in handling, about 15 hands. (Reported to have been running some time at Elandslaagte. (Impounded by Native Umjaji on 6th March, 1908.)

*Vryheid*.—(1) She-donkey, light colour under stomach, dark back, lame, and in very poor condition, no visible brands. (2) He-donkey, gelding, foal of above, about a year old, black, cut out of side of right ear, no brands.

### **ON THE 20TH MAY.**

*Crystal Waters* (Polela Division).—Light bay horse, slit in left ear, old sore back, little white on both hind legs, no brands visible, aged.

*Inkhlatzje* (Vryheid Division).—Small jack donkey, mouse colour, no brands.

*Loteni* (Impendhle Division).—Black bull, eighteen months old, with white spots on belly and legs, no brands or ear marks. (Running on the farm "Borreray," Loteni, and reported by Mr. Harry McLean as being too wild to be driven to the Pound.)

### **ON THE 3RD JUNE.**

*Loteni* (Impendhle Division).—Black two-year-old ox, brand turned U on right leg, swallow tail on right ear, top cut off left ear, three small patches of white on belly.

### **PAULPIETERSBURG POUND.**

A Pound has been re-established at Paulpietersburg, and the gaoler at Paulpietersburg has been appointed Keeper thereof.



## ***Agricultural and Other Shows, 1908.***

*(Revised to date of going to Press.)*

CAMPERDOWN (Camperdown Agricultural Association).—Date not yet fixed. W. E. Allsopp, Cato Ridge, *Secretary*.

DUNDEE (Dundee Agricultural Society).—Show, 18th and 19th June. Entries close 4th June. J. McKenzie, Dundee, *Secretary*.

DURBAN (Durban and Coast Society of Agriculture and Industry).—Show, 16th, 17th, and 18th July. Entries close 12th June; late entries 28th June at double rates. John Morley, *Secretary*.

DURBAN AND COAST POULTRY CLUB.—Show to be held in conjunction with that of the Durban and Coast Society of Agriculture (see above) on the 16th and 17th July. Jas. Fletcher, *Secretary*.

GREYTOWN (Umvoti Agricultural Society).—Show, 4th June. All entries close 25th May. W. H. Gibbs, *Secretary*.

HIGHFLATS FARMERS' CLUB.—Show to be held in conjunction with Ixopo Agricultural Society.

HIMEVILLE (Himeville Agricultural Society).—Show, 14th May. Entries close 25th April. G. Palframan, *Secretary*.

IXOPO (Ixopo Agricultural Society).—Show, 2nd July. Entries close 18th June. A. G. Harris, *Assistant Hon. Secretary*.

LADYSMITH (Klip River Agricultural Society).—Show, 3rd July. E. V. Bambrick, Box 90, Ladysmith, *Secretary*.

PIETERMARITZBURG (Natal Poultry Club).—Show, 5th and 6th June. D. M. Dixon, Box 250, *Secretary*.

PIETERMARITZBURG (Royal Agricultural Society).—Show, 11th 12th, and 13th June. Duff, Eadie & Co., Timber Street, *Secretaries*.

PORT SHEPSTONE (Lower Umzimkulu Agricultural Association).—Show, 7th July. Entries close 5th July. Wm. J. Plows, Port Shepstone, *Secretary*.

RICHMOND (Richmond Agricultural Society).—Show, 9th July. Cecil Williams, Richmond, *Secretary*.

UMZINTO (Alexandra Agricultural and Horticultural Association).—Show, 9th July. Geo. Lamb, Box 68, Umzinto, *Secretary*.

WEENEN (Weenen Agricultural Society).—Show, 16th June. Entries close 6th June. E. Catherley, South Downs, Estcourt, *Secretary*.

### **SOCIETIES HOLDING NO SHOWS.**

Boston Farmers' Association.  
Byrne Agricultural Association.  
Donnybrook Farmers' Association.  
Dronk Vlei Farmers' Association.  
Durban County Farmers' Association.  
Eshowe District Farmers' Association.  
Frere Farmers' Association.  
Garden Castle Farmers' Association.  
Gourton Farmers' Association.  
Hatting Spruit Farmers' Association.

Ladysmith Farmers' Association.  
Little Tugela Farmers' Association.  
New Hanover Agricultural Association.  
Nottingham Road Farmers' Association.  
Slangriver Boeren Vereeniging.  
Umvoti Farmers' Association.  
Utrecht Farmers' Association.  
Vryheid Agricultural Society.  
Zululand Coast Farmers' Association.

The Mooi River Farmers' Association (*Secretary* : H. B. Hall, Mooi River) have not yet decided whether to hold a Show this year.

## **Executives of Farmers' Associations.**

**ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION.**—President: Wm. Thompson. Hon. Vice-Presidents: A. Blamey, E. W. Hawksworth, Thos. Kirkman, H. Bazley, J. L. Knight, R.M. Hon. Secretary and Treasurer: Geo. Lamo. Hon. Auditor: W. B. Brunner. Committee: W. Arnott, H. G. Arbuthnot, R. C. Archibald, R. G. Archibald, J. Bazley, A. Behrmann, W. Cooke, G. J. Crookes, R. Cruickshank, H. D. Hawksworth, H. E. Hawksworth, A. F. W. Hawksworth, R. C. Hawksworth, J. Landers, D. McAndrew, F. Nelson, C. A. Preston, Dr. Rouillard, W. A. Gilbert, Fred Blamey, Rev. B. M. Ford, S. C. Hawksworth, J. C. Landers, S. F. Crookes, J. J. Crookes, R. A. Lindsay, J. A. Curle, F. B. Preston, R. Parkin, H. Reynolds, J. B. Stewart, C. Taylor, H. H. P. Waller, J. Ross, Rev. W. C. Wilcox, Dr. W. P. Tritton.

**ALFRED COUNTY FARMERS' ASSOCIATION.**—President: A. G. Prentice, J.P. Vice-Presidents: C. Knox, J.P., L. T. Treneur, and C. A. Holweil. Hon. Secretary and Treasurer: H. C. Hitchins. Committee: C. M. Etheridge, R. Fann, J.P., V. Hitchins, S. Aitchison, J.P., W. B. Rethman, Dr. Case, J.P., H. Rethman, R. G. Mack, J. Hogg.

**BOSTON FARMERS' ASSOCIATION.**—President: Thomas Fleming. Vice-President: H. Phipson. Hon. Secretary and Treasurer, W. J. Fly, J.P.

**CAMPERDOWN AGRICULTURAL SOCIETY.**—President: John Moon, J.P. Vice-Presidents: J. Gavin and John W. Harvey, J.P. Hon. Secretary: W. E. Allsopp.

**CAMPERDOWN AND DISTRICT FARMERS' ASSOCIATION.**—President: John Moon, J.P. Vice-President: F. N. Meyer. Hon. Sec.: J. Baker. Committee: H. Baker, J. Gavin, J. W. Harvey, J.P., W. B. Turner, H. H. Hutton, C. Baker, H. E. Meyer.

**DUNDEE AGRICULTURAL SOCIETY.**—President: F. Turton, J.P. Vice-Presidents: The Minister of Agriculture, the Mayor of Dundee, Messrs. A. L. Jansen, H. Wiltshire, and T. P. Smith. Hon. Secretary and Treasurer: J. McKenzie. Committee: D. C. Pieters, D. Macphail, M. Taylor, A. W. Smallie, W. Craig, C. G. Willson, D. G. Smith, A. Grice, W. J. H. Muller, E. G. Wohltz, G. M. de Waal, B. J. Humann, W. H. Doidge, R. Retallack, H. Ryley, H. J. Head, A. S. Pieters, R. R. Mortimer, C. Vermaak, A. E. Norman, W. V. Marshall, H. P. Handley, J. Dyson, T. J. Harvey.

**DURBAN COUNTY FARMERS' ASSOCIATION.**—Patron: J. H. Colenbrander. President: J. McIntosh. Vice-Presidents: H. Westermeyer, R. R. McDonald. Committee: F. R. W. Boehmer, G. Compton, H. Freese, W. Freese, W. Gillitt, H. W. Königkræmer, H. W. Nichols, F. Schæfermann. Hon. Sec. and Treasurer: Frank J. Voiek.

**ESHOWE DISTRICT FARMERS' ASSOCIATION.**—President: J. R. Pennefather. Vice-President: C. F. Adams. Secretary: T. Parkins. Treasurer: W. T. Brockwell.

**GOURTON FARMERS' ASSOCIATION.**—President: W. C. Stockil, Esq., J.P. Vice-President: M. Sandison, Esq. Hon. Secretary and Treasurer: Frederick B. Burnard, Esq.

**HATTING SPRUIT FARMERS' ASSOCIATION.**—President: J. Campbell, Vice-President: A. W. Smallie. Hon. Secretary and Treasurer: R. J. Hearn. Committee: G. Queddon, T. P. Smith, W. A. Helmer, Thos. Brookes, N. Glutz, Wm. Craig, W. R. Quested, J. A. Brookes, W. T. Heslop, Thos. Dewar, F. Turton, W. H. Patham, A. E. Norman, D. P. Campbell.

**HIMEVILLE AGRICULTURAL SOCIETY.**—President: Henry C. Gold, Dartford, Polela. Vice-Presidents: W. Little, F. E. Peto, G. Malcolm. Hon. Sec. and Treasurer: G. Palframan. Watermead, Polela. Executive Committee: G. Malcolm, W. S. Johnston, P. McKenzie, W. Little, G. Royston. Yard Steward: H. Brown. Auditors: T. C. Dearlove and T. E. Marriott.

**HOWICK FARMERS' ASSOCIATION.**—Chairman, Thos. Morton; Vice-Chairman, M. A. Sutton; Hon. Secretary and Treasurer, A. Clark.

**INGOGO FARMERS ASSOCIATION.**—President: Angus Wood, J.P. Vice-Presidents: G. A. Fimstone and J. Browning. Hon. Secretary and Treasurer: C. Watt.

**IXOPO AGRICULTURAL SOCIETY.**—President: F. L. Thring, J.P. Vice-Presidents: Col. W. Arnott, B.M.R., W. K. Anderson, J.P., C. E. Hancock, J.P. Committee: John Anderson, Thos. Allen, J. C. Auld, H. D. Archibald, F. S. Beningfield, S. Boyd, T. L. Clarence, F. E. Foxon, R.M., Wm. Foster, Jas. T. Foster, C. C. Foster, Geo. E. Francis, L. Gray, A. M. Greer, J.P., J. R. Greer, Wm. Gold, H. A. Hill, C. F. Harris, A. E. Keith, R. Kennedy, Geo. Martin, W. Oakes, L. J. Phipps, T. F. Remfry, J. W. Robinson, Jas. Schofield, M.L.A., D. C. Smail, A. Stone, W. R. Way, A. B. Walker, M.L.A., P. D. Webb. Hon. Sec.: G. C. Way. Hon. Ass. Sec.: A. G. Harris. Hon. Treasurer: T. Arnott.

**IXOPO FARMERS' ASSOCIATION.**—President: A. E. L. Keith, Ixopo. Vice-Presidents: Geo. Martin, Claybrooke, Ixopo; A. Kirkman, Lufafa, Ixopo. Hon. Secretary and Treasurer: Geo. E. Francis, Morningview Ixopo. Delegates to Farmers' Union: President and James Foster. Committee: F. Remfry, R. Vause, C. E. Hancock, John Anderson, R. Greer, W. Oakes, D. Campbell, G. C. Way, James Foster.

**KLIP RIVER AGRICULTURAL SOCIETY.**—President: Daniel Bester, worth, J.P. Vice-Presidents: W. Pepworth, J. G. Bester, Wm. A. Illing, Secretary and Treasurer: Edward V. Bambrick (Box 90, Ladysmith). Executive Committee: A. Brink, J. Farquhar, C.M.G., M.L.A., W. C. Hattingh, J. G. Hyde, Trev. Hyde, A. L. Horsley, W. Freer, L. A. Leonard, H. Nicholson, H. C. Thornhill, Herman Illing, D. Munger, P. de Waal, J. H. Newton, D. Sparks, J.P., J. T. Francis, A. W. (Gus) Iding, G. Pinkney, W. Cochrane, George L. Coventry, and *ex officio* officers.

**KRANTZKOP FARMERS' ASSOCIATION.**—President: Capt. M. Landsberg. Vice-President: P. R. Vermaak. Hon. Sec. and Treasurer: Dr. L. L. Proksch. Committee: C. J. van Rooyen (Albany), C. J. van Rooyen (Wonderfontein), Philip Nel, J. A. G. Mare, L. M. G. van Rooyen, J. C. Martens.

**LION'S RIVER DIVISION AGRICULTURAL SOCIETY.**—President: Graham Hutchinson. Vice-President: H. Nisbet. Executive Committee: H. Nisbet, M. A. Sutton, A. J. Holmes, J. Humphries, Jno. Pole, and W. A. Lawton; Auditor: W. J. R. Harvard. Hon. Sec. and Treasurer: Arthur F. Dicks, P.O. Box 1, Howick.

**LITTLE TUGELA FARMERS' ASSOCIATION.**—President: F. van de Waal. Vice-President: F. G. King. Secretary and Treasurer: H. L. Frances. Auditor: A. D. Buchanan. Committee: R. P. Summersgill, F. W. Holmes, J. P. Wepenaar, J. J. Harding, Max Cameron.

**LOWER TUGELA DIVISION ASSOCIATION.**—President: T. G. Colne, brander. Vice-President: Lieut. Col. F. Addison. Hon. Secretary and Treasurer: H. Curtis Smith. Committee: A. S. L. Hulett, A. E. Foss, G. Stewart, J. B. Hulett.

**LOWER UMZIMKULU AGRICULTURAL ASSOCIATION.**—President: D. C. Aiken, J.P. Vice-Presidents: H. Albers and C. H. Mitchell, J.P. Hon. Secretary and Treasurer: W. J. Plows. Committee: C. Manning, J. W. Aiken, W. G. Camp, T. F. Godwin, J. Hutton, H. Norden and A. Borchard. Hon. Secretary, Show Committee: J. W. Aiken. Show Committee: A. E. Collison, A. Borchard, F. Knoop, A. Ringo, H. F. Voigts, J. Hutton, C. Manning, A. J. Lugg and H. Albers. Hon. Auditor: J. W. Aiken.

**MID-ILLOVO FARMERS' CLUB.**—Chairman: L. G. Wingfield-Stratford, J.P. Vice-Chairman: B. B. Evans. Hon. Secretary: J. W. V. Montgomery, Assistant Hon. Secretary: S. C. Phipson. Hon. Treasurer: Jos. McCullough.

**MOOI RIVER FARMERS' ASSOCIATION.**—President: R. Garland. Vice-President: C. B. Lloyd; Hon. Treasurer: H. A. Rohde; Collector: Capt. W. H. Stevenson; Auditor: Claude Scott; Hon. Secretary: H. B. Hall.

**MUDEN AGRICULTURAL ASSOCIATION.**—President: Thos. Thresh. Vice-Presidents: Wm. Lilje, E. A. Grantham. Secretary and Treasurer: C. A. Selling. Committee: Otto Rottecher, Karl Lilje, Karl Rotter, Herman Schafer, Fritz Torlage, T. Braithwaite, Ernest Rottecher, C. H. Tilbrook, Rev. H. Rottecher (Hon. Life Member).

**NEWCASTLE.**—President: F. A. R. Johnstone, J.P. Vice-President: C. Earl, J.P., Mayor of Newcastle; Angus Wood, J.P., Ingogo; O. Schwikkard, C.M.G., Newcastle. Secretary: Wm. Beardall. Treasurer: Ed. Nicols. Executive Committee: L. H. S. Jones, E. Phillips, H. C. Caldecott, C. Watson, G. Langley, W. A. Lang, W. J. P. Adendorff, J. E. de Wet, O. Davis, S. W. Reynolds, B. Pettigrew, G. W. Thomas, G. H. Bishop, H. R. Muir, M. C. Adendorff, W. Napier, P. Van Breda, Chriss Botha, G. Templer.

**NEW HANOVER AGRICULTURAL ASSOCIATION.**—President: G. C. Mackenzie. Vice-Presidents: J. C. Watt, J.P., and R. H. Oellermann. Life



Member : C. A. S. Yonge, M.L.A. Secretary and Treasurer : W. D. Stewart, New Hanover. Auditor : J. H. F. Hohls. Committee : W. N. Angus, E. Bentley, W. W. Bentley, Edward Boast, E. E. Comins, G. E. Comins, C. Crookes, jun., H. Dinkelmann, J. Duval, W. Fortmann, Dr. C. H. Herbert, J. Hillermann, J. H. F. Hohls, H. Jacobson, H. A. Light, G. C. Mackenzie, A. F. Mackenzie, T. M. Mackenzie, J. Muirhead, J.P., Oswald Muirhead, G. Moe, J.P., J. Moe, O. Moe, C. Oellermann, F. Oellermann, C. J. Oellermann, W. Ortmann, J. C. Otte, E. Peckham, J.P., J. A. Potterill, S. Peckham, C. M. Scott, Rev. J. Scott, Wm. Schröder, J.P., Owen Solomon, J. H. Smith, Riby Smith, F. Thöle, H. Vorwerk, H. F. Westbrook, W. H. Westbrook, C. Westbrook, T. Wolhuter.

**NOODSBERG ROAD AGRICULTURAL ASSOCIATION.**—President : Fritz Reiche, J.P.; Vice-Presidents : H. Mummbrauer, P. Rodehorst, W. Dralle, W. Wortmann; Committee : W. Bartels, F. Bosse, H. Brammer, A. J. Bruyns, H. Bruyns, Carl Dralle, H. Gebers, W. Gevers, J. H. Holley, jr., W. C. Holley, C. Hillermann, L. Koch, H. Köhler, F. E. Kuhn, M. Maister, H. Merens, A. Meyer, H. Meyer-Estorf, H. W. Meyer, K. A. Meyer, H. Misselborn, W. Misselborn, K. Peters, I. Pfotenbauer, G. Rabe, G. Reiche, Joh. Reiche, W. Rencken, H. Rosenbrock, H. Schmidt, K. Schmidt, Rev. Jas. Scott, K. Seele, F. J. Smith, J. Thies, W. Witthöft, P. Worthmann, A. Wortmann, F. Wortmann, H. Wortmann, Secretary : Paul Vietzen, P.O., Singletree; Hon. Treasurer : E. Beurlen.

**NOTTINGHAM ROAD FARMERS' ASSOCIATION.**—President : W. Henwood, J.P. Vice-President : J. King, J.P. Auditor : A. Mengens. Secretary and Treasurer : C. J. King, Nottingham Road.

**PIETERMARITZBURGSCH BOEREN VEREENIGING.**—President : D. P. Boshoff; Secretary : E. G. Jansen, 313, Loop Street, Maritzburg.

**RICHMOND AGRICULTURAL SOCIETY.**—President : John Marwick. Vice-Presidents : W. P. Payn, A. W. Cooper, J. W. McKenzie and Chas. Nicholson. Honorary Treasurer : R. Nicholson. Hon. Secretary : Tom McCrystal. Committee : J. W. T. Marwick, Evan Harries, R. A. McKenzie, F. O. Howes, H. M. Moyes, W. Comrie, Thos. Marwick, J. C. Nicholson, J. W. Flett and E. J. B. Hosking.

**RICHMOND ROAD FARMERS' ASSOCIATION.**—President : Thos Stead, J.P. Vice-President : W. Mapstone. Secretary and Treasurer : W. L. Stead, New Leeds, F.O. Committee : D. Malcolm, J. Mapstone, W. P. Payne, J. James, J. Sinclair, W. S. Crouch, H. B. Boyd, W. Middleton, W. Oldfield, T. E. Horwood.

**ROYAL AGRICULTURAL SOCIETY OF NATAL.**—President : Sir G. M. Sutton, K.C.M.G. Vice-Presidents : W. S. Crart, Jas. King, D. C. Dick, G. J. Macfarlane, C.M.G., O. Hosking, with His Worship the Mayor, *ex officio*. Secretaries, Treasurers and Collectors : Duff, Eadie & Co., 12, Timber Street, Pietermaritzburg. Yard Superintendent : H. J. Stirton. Auditor : G. V. Lambert. General Committee : T. J. Allison, W. H. Buchanan, F. G. Burchell, W. H. Cobley, P. H. Campbell, R. Comins, W. P. Gough, E. S. Goodwill, K. H. Hathorn, K.C., T. W. J. Hall, J. Hall, A. W. Herbert, L. Line, Col. Sir D. Mackenzie, K.C.M.G., Jas. Morton, Sir T. K. Murray, Jno. Moon, W. J. O'Brien, P. Otto, R. H. Pepworth, J. F. Potterill, A. Robinson, Rev. J. Scott, P. D. Simmons, H. Solomon, W. L. Stead, H. J. Stirton, Dr. Oddin Taylor, F. W. Jameson, S. J. Mason. Executive Committee : President, Vice-Presidents and W. J. O'Brien, A. W. Herbert, W. H. Cobley, K. H. Hathorn, K.C., and Col. E. M. Greene. Members appointed by Corporation : Councillors Ireland, Sanders and Hathorn.

**SLANG RIVER (UTRECHT) FARMERS' ASSOCIATION.**—Chairman : P. J. Kemp; Executive Committee : J. J. Uys, J. Z. Moolman, T. J. Botha, P. J. Viljoen, P. J. Kemp; Hon. Sec. and Treasurer, Thys Uys, Utrecht P.O.

**UMVOTI AGRICULTURAL SOCIETY.**—President : Major T. Menne. Vice-Presidents : Theunis J. Nel, M.L.A., W. J. Slatter, W. L'Estrange. Executive Committee : Tol Nel, A. Newmarch, W. Lilje, O. Rottecher, S. C. Van Rooyen, W. Newmarch, E. J. Van Rooyen, O. Norton, I. M. Nel, J. Browning. Managers of Show Yard : J. M. Handley and N. Hunter. Hon. Auditor : W. K. Ente. Secretary and Treasurer : W. H. Gibbs.

**UMVOTI FARMERS' ASSOCIATION.**—President : P. R. Botha (J.'s son). Vice-President : J. M. Handley. Secretary and Treasurer : G. E. Cadle (Box 6, Greytown). Auditor : J. M. Nel. Committee : W. J. Slatter, J. G. Nel, H. F. Toriage, R. J. Landsberg, A. Newmarch, P. H. van Rooyen, A. F. Handley.

**UPPER BIGGARSBERG FARMERS' ASSOCIATION.**—President : W. L. Oldacre. Vice-President : G. Langley. Hon. Secretary : W. F. B. Sutherland.

**UTRECHT AGRICULTURAL SOCIETY.**—Chairman : L. Viljoen; Vice-Chairman : B. H. Breytenbach; Members : I. Bierman, M. M. Knight, J. H.



Klopper, B. C. Hattingh, T. Botha, M. Gregory, P. L. Uys, H. P. Breytenbach; Secretary: G. J. Shawe.

UTRECHT BOEREN VEREENIGING.—President: D. J. A. van der Spuy Secretary: G. J. Shawe, Utrecht.

VICTORIA COUNTY AGRICULTURAL SOCIETY.—President: Lieut.-Colonel F. Addison; Vice Presidents: Sir Liege Hulett, Kt., M.L.A., W. J. Thompson, Esq., J.P., J. Polkinghorne, Esq., M.L.A.; Committee: Messrs. W. H. B. Addison, G. S. Armstrong, M.L.A., C. Bishop, J.P., D. Brown, sen., J.P., W. Campbell, T. G. Colenbrander, A. E. Foss, J.P., A. S. L. Hulett, J.P., J. B. Hulett, C. Jackson, G. Nicholson, J.P., T. Polkinghorne, J. W. Perkins, J.P., E. Saunders, J.P., G. Stewart, and J. H. Stansell; Hon. Secretary and Treasurer: H. Curtis Smith (Stanger)

VRYHEID (WARD I) AGRICULTURAL SOCIETY.—President: E Dalton. Vice-President: J. F. Potgieter. Secretary: F. Kolbe. Assistant Secretary: H. Lombaard. Committee: Secretary, Assistant Secretary, and A. von Levetzow, T. Ries, P. Grobler, F. Molman, A. Steenkamp.

WEENEN AGRICULTURAL SOCIETY.—President: Alan Stuart; Vice-Presidents: R. Garland, R. H. Ralfe, F. I. de Waal; Hon. Treasurer: F. C. Schiever; Hon. Secretary: E. Cautherley; Auditor: S. Wolff; Executive Committee: Hon. H. D. Winter M.L.A., J. W. Moor, M.L.A., D. W. Mackay, T. H. Hindle and E. L. Estrange; Manager of Show Yard: S. Vaughan; Assistant: A. Clouston.

WEENEN COUNTY HORTICULTURAL SOCIETY.—Committee of Management: The President and Treasurer of the Weenen Agricultural Society and C. J. Offord, G. W. Linfoot, T. J. Nunn, Dr. Brewitt, S. Vaughan; Hon. Secretary: E. Cautherley.

ZULULAND FARMERS' ASSOCIATION.—President: F. W. White; Vice-President: C. E. Symonds. Secretary: R. H. M. Alister. Committee: Hon. D. C. Uijs, A. W. Symonds, H. T. James, R. J. Ortlepp, J. N. R. Dixon.

ZULULAND COAST FARMERS' ASSOCIATION.—President: G. H. Hulett; Vice-President: C. Hill; Hon. Secretary and Treasurer: F. Brammage, Ginginhlovu.

---

*(The Editor will be obliged if the Hon. Secretaries will supply him with lists of the Executives of their Associations.)*

---

## **Cows Wanted.**

WANTED urgently, cows just calved or due to calve. Old animals suitable; any breed.

Apply—P.O. Box 282,  
Pietermaritzburg.

## **Diamond Drilling.**

SOME of the departmental diamond drilling plants are at present disengaged and available for hire for boring for either minerals or water. Particulars as to terms of hire may be obtained from the undersigned.

CHAS. J. GRAY,  
Commissioner of Mines.

## Experiment Station Notices.

### SALE OF STOCK.

OFFERS are invited for the remaining young dairy bulls, bred at Cedara and running on the veld, as detailed below. Inspection can be arranged to suit prospective purchasers.

#### BLACK.

- No. 3. Sire, Welsh Runt, Dam, F.1., born July 28th, 1906.  
 No. 4. „ „ „ „ Dam, F.9., born July 29th, 1906.

#### DEVON.

- D.3. Dam C.13, very good milker, by Star of the West, born 22/3/06.  
 D.4. Dam C.8, „ „ „ „ „ 24/3/06.  
 D.9. Dam C.8, „ „ „ „ „ 1/4/07.  
 D.10. Dam C.13, „ „ „ „ „ 19/4/07.

### SALE OF PERSIAN RAMS.

Offers are invited for six Persian ram lambs, bred at Cedara from Stud Ram No. 648; winner, 1st prize, Port Elizabeth 1906, Pietermaritzburg and Durban 1907, and selected ewes from Montague Gadd's flock, Tafelberg, N.C. Latter have given this season 100 per cent. lambs. Some of these rams have scaled 64lbs. at four months. Inspection by arrangement.

### SALE OF POULTRY.

Offers are invited for the pick of 150 cockerels; White Leghorn, White Minorcas, Buff Orpingtons, etc., bred almost exclusively from last year's winners. Inspection by arrangement.

### SALE OF STEAM PLOUGHS.

Offers are invited for Two 6-Furrow Spalding-Robbins, Stump-Jumping Disc-Plooughs for Steam Traction. These have had little use, and the frames are as good as new, while the Ploughs were fitted with new discs last season. Landed cost of these was £56 each at the Point. Approximate weight, 2,000 lbs.

### TREES FOR SALE.

To encourage tree-planting, transplants and seeds of forest trees are supplied by Government, so far as in stock, at the undermentioned rates, exclusive of carriage, from the Government Nursery, Central Experimental Farm, Cedara.

Transplants of Eucalyptus, Pines, Acacias, Casuarinas, Cupressus, etc., about 25 trees in each tin, at 8s. 4d. per 100 trees. Trees in separate tins at 1s. each.

Transplants of scarce kinds, larger trees, or surplus stock, when available will be charged at special rates, which will be furnished on application.

Tree seeds, in variety, at 1s. per packet. Price per pound, which fluctuates, will be furnished on application.

Package and postage of seed, when required, charged 1s. per lb. extra.

Orders for present or spring delivery should be addressed to the **Chief Afforestation Officer, Cedara**, and must be accompanied by a remittance in cash or postal order. Cheques cannot be accepted.

## PURCHASE OF TREE SEEDS.

With a view to the encouragement of seed production in the Colony, offers are invited from persons having locally-grown seed or exotic trees for sale. Not less than one pound will be purchased; and a specimen bearing seed vessels or flowers should be sent for identification purposes. Offers should be made in the first instance to the Chief Afforestation Officer, Cedara.

## SEEDS FOR DISTRIBUTION.

Seeds of the following have been secured for distribution to farmers at cost price—Cotton, Sugar Beet, Tobacco, Rice, Lupins and Field Peas, Italian and Perennial Rye Grass, Paspalum and Cocksfoot. Varieties and prices upon application to the Storekeeper, C.X.F., Cedara.

## PARA RUBBER PLANTS.

Offers are invited for 800 well-established Para Rubber Plants propagated from selected Ceylon seed. Delivery at Empangeni Forest Station, Zululand.

## FEES FOR AGRICULTURAL ANALYSIS.

It is hereby notified that Farmers and others can secure analytical determinations from the Government Laboratory, Central Experiment Farm, Cedara, in accordance with the following scale of fees, which is subject to revision:—

|                                                                         | Scale I. | Scale II. |
|-------------------------------------------------------------------------|----------|-----------|
| FERTILIZERS AND FEEDING STUFFS:                                         | £ s. d.  | £ s. d.   |
| Determination of 1 constituent ...                                      | 0 7 6    | 0 5 0     |
| 2 or 3 constituents ...                                                 | 0 15 0   | 0 10 0    |
| Complete analysis ...                                                   | 1 1 0    | 15 0      |
| SOILS: Partial analysis of a soil in relation to its fertility ...      | 1 1 0    | 0 10 6    |
| Complete analysis of a soil ...                                         | 2 2 0    | 1 1 0     |
| WATER: Irrigation and drainage ..                                       | 1 10 0   | 0 10 6    |
| VEGETABLE PRODUCE: Fodders, Ensilage, Grains, &c. ...                   | 1 1 0    | 0 15 0    |
| MILK, CREAM, BUTTER: Fat only ...                                       | 0 5 0    | 0 2 6     |
| "          : Complete ...                                               | 0 15 0   | 0 7 6     |
| WATTLE BARKS AND TEA: Tannin ...                                        | 0 5 0    | 0 2 6     |
| CATTLE DIPS: Quantitative analysis of 1 to 3 principal constituents ... | 0 10 0   | 0 5 0     |
| INSECTICIDES:                                                           |          |           |
| Qualitative analysis each constituent ...                               | 0 5 0    | 0 2 6     |
| Quantitative " " " " ...                                                | 0 10 6   | 0 5 0     |

Scale No. 1 is applicable to samples handed in by Merchants and Dealers, and where trade interests are involved.

Scale No. 2 is applicable to samples forwarded by *bona fide* Farmers and Gardeners.

Samples will be accepted at the discretion of the Department, and must be properly selected and labelled.

The Department reserves the right to publish the results of any analysis performed by it; and, where such is deemed of sufficient public interest, it will remain at the discretion of the Department to remit any charges hereunder.

E. R. SAWER,

Director, Experiment Stations.  
Acting Conservator of Forests.

November 22nd, 1907.

## CENTRAL EXPERIMENT FARM, CEDARA.

IN order to minimise interference with the general course of work on the Central Experiment Farm, Cedara, it has been found necessary to set apart one day of the week, namely, Friday, as a visitors' day.

Arrangements will accordingly be made on that day for receiving visitors and showing them round the Farm. A trap will be at Cedara Station to meet the up 9.50 a.m. train; and if intending visitors from up-country will give notice to the guard at Howick Station, on their way down a trap will be sent to meet the train which passes through Cedara at 11.2 a.m. Visitors travelling by other trains will also be met if they will previously make arrangements by writing.

On other than the visitors' day, visitors may be received by appointment, but special attention cannot be guaranteed in regard to their being shown round.

As the catering involves such a strain upon the resources of the School of Agriculture, it has been decided to limit the number of delegates from any one Association to 25 per cent. of its membership. At least 14 days' clear notice must be given by Associations, so that there may be time to make all necessary arrangements.

In view of the fact that Parliament has refused to grant the necessary funds, the cost of railway tickets can no longer be borne by the Department of Agriculture.

All communications in connection with proposed visits to the Experiment Farm should be addressed to the Director of Experiment Stations, Cedara.

24th September, 1907.

W. A. DEANE Minister of Agriculture

---

## Employment Bureau.

---

THE Department of Agriculture has received applications from the undermentioned, who are prepared to become assistants or apprentices on farms. The Department will be glad to hear from farmers willing to take young men as assistants, and to place them in correspondence with the various applicants. When communicating on the subject, farmers may refer to the applicants by quoting the numbers in the following list:—

109a.—Scotchman, 39 years of age, producing good references from his previous employers, desires to obtain on a farm light work, such as bookkeeping, superintending despatch of produce, &c.

No. 110a.—Englishman, 39 years of age, gardener by profession, with knowledge of farming, desires employment on a farm. Appears to be a steady and reliable man.

No. 111a.—Married man, 36, no children, desires managership of farm. Spent five years with Capt Hayes, and is well acquainted with the management of horses, including racing horses. States he has sound veterinary knowledge and understands dairy, poultry, pig, and stock farming generally. South African experience, four years Cape Colony and one year Impendhle Division, Natal. Is prepared to work for month or two for board and lodging to prove capabilities, provided sound opening at end of that time.

---

Farmers requiring good, steady farm hands would do well to communicate with Ensign Anderson, of the Salvation Army Shelter, Maritzburg, who constantly has good men at the Shelter who would be glad of employment at reasonable rates. Ensign Anderson pledges himself not to recommend for employment any but those he is satisfied will give satisfaction to their employers. He will be pleased to enter into correspondence with any farmer who may address him on the subject.

---

It is announced that the Second Session of the First Parliament of the Transvaal will be opened on the 15th June.



## East Coast Fever.

### SLAUGHTER CATTLE.

THE Department of Agriculture has erected abattoirs adjoining the Government Cold Stores, Maritzburg, where people will be able to forward cattle from clean and infected areas for slaughter. Killing, chilling, and freezing can be undertaken by the Department if desired, and arrangements can also be made for the forwarding by rail of meat intended for sale in markets outside Maritzburg. This will enable farmers, who wish to dispose of their stock for slaughter and find a difficulty in so doing, to have their animals killed in Maritzburg and the meat forwarded to Durban or any other market. The abattoirs will be under the personal supervision of Mr. A. R. Burford, the Manager of the Government Cold Stores, who is thoroughly experienced in this particular class of work.

The provisional abattoir charges are :—

|                             |                 |     |                                                        |
|-----------------------------|-----------------|-----|--------------------------------------------------------|
| Cattle per head             | ...             | ... | 1s., with a minimum of £3 per killing space per month. |
| Sheep                       | ...             | ... | 1½d. each.                                             |
| Pigs                        | ...             | ... | 3d. "                                                  |
| Chilling and Freezing Beef, | 1st week        | ... | 1s. 3d. per qr.                                        |
| "                           | 2nd "           | ... | 1s. "                                                  |
| "                           | Remaining weeks | ... | 9d. "                                                  |
| Sheep                       | per week        | ... | 3d.                                                    |
| Pigs                        | ...             | ... | 6d.                                                    |

Charges for killing and handling Cattle, and placing same in Cold Storage, if required, or meat to be taken away by customer from hanging-room :—

|                  |     |     |                                              |
|------------------|-----|-----|----------------------------------------------|
| Cattle, per head | ... | ... | 4s. each (including abattoir fee).           |
| Sheep            | ... | ... | 6d. "                                        |
| Pigs             | ... | ... | 1s. " up to 200 lbs.                         |
| "                | ... | ... | 1s. 6d. each, over 200 lbs. & up to 300 lbs. |
| "                | ... | ... | 2s. " over 300 lbs.                          |

W. A. DEANE,  
Minister of Agriculture

Department of Agriculture, Maritzburg,  
9th April 1907.

In a recent experiment, a soil, impregnated with tetanus germs ten years before, was inoculated in a guinea pig and caused its death from the disease, showing the remarkable vitality of the microbes under certain conditions.

The Nantes Butter and Refrigerating Company have made a net profit of over £15,000 in seven months. Nearly all the butter is exported to the United Kingdom. British dairymen wonder how it is done. The secret is co-operation and combination.

## Rules for Agricultural Co-Operative Societies.

THE Department of Agriculture has for disposal, at the rate of one shilling each, copies of Model Rules for the use of Agricultural Co-operative Societies. Applications should be made to the Acting Under Secretary for Agriculture, Pietermaritzburg.

## Bulletins Issued by the Dept. of Agriculture.

Single copies of such as are still in print may be obtained free (excepting those with price attached) on application to the Acting Under Secretary for Agriculture, Pietermaritzburg.

No.

- 1.—“Notes on Fruit Culture,” by Claude Fuller. [1902]. (*Out of print.*)
- 2.—“Manures on the Natal Market, 1902,” by A. Pardy. [1902].
- 3.—“Insects in an Important Rôle,” by Claude Fuller. [1904]. (*Out of Print.*)
- 4.—“Manures on the Natal Market, 1903,” by A. Pardy. [1903].
- 5.—“Weed Circular,” by Claude Fuller. [1905].
- 6.—“Manures on the Natal Market, 1904,” by A. Pardy. [1904].
- 7.—“Tree-planting in Natal,” by T. R. Sim. [1905]. (*Price 2s. 6d.*)
- 8.—“Agricultural Co-operation,” by E. T. Mullens. [1905]. (*Out of Print.*)
- 9.—“Potato Culture” by A. N. Pearson. [1905]. (*Out of Print.*)
- 10.—“Manures on Natal Market, 1905,” by A. Pardy. [1905].  
“Agricultural Statistics, Natal, 1904-5.” [1906]. (*Out of Print.*)
- 11.—“East Coast Fever,” by S. B. Woollatt. [1906].
- 12.—“Manures on Natal Market, 1906,” by A. Pardy. [1906].  
“Agricultural Statistics, Natal, 1905-6.” [1907].

## SOUTH AFRICAN STUD BOOK.

A record of all classes of Stock: the object being to encourage the breeding of thoroughbred stock and to maintain the purity of breeds, thus enhancing their value to the individual owner, and to the country generally.

Applications for Membership and Entries of Stock should be addressed:—

|                          |                                                         |
|--------------------------|---------------------------------------------------------|
| For CAPE COLONY ...      | J. PIKE, P.O. Box 703, Cape Town.                       |
| „ TRANSVAAL ..           | F. T. NICHOLSON, P.O. Box 134, Pretoria.                |
| „ ORANGE RIVER COLONY... | E. J. MACMILLAN, Government Buildings,<br>Bloemfontein. |

## THE SOUTH AFRICAN STUD BOOK

IS OBTAINABLE OF:—

T. MASKEW MILLER,  
ADDERLEY STREET,  
CAPETOWN.

PRICE 10s. 6d.

J. PIKE,  
SECRETARY, SOUTH AFRICAN STUD BOOK ASSOCIATION.

## **QUIBELL'S LIQUID DIP.**

Thousands of gal ons of this is used in the Colony annually.

## **QUIBELL'S POWDER DIP.**

This for several years has been sold in cases of **40** 2 $\frac{3}{4}$  lb. packets, mixing 1 to 30 gallons water, but to meet the wishes of Farmers regularly using this Dip it will in future be sold in cases containing **48** 2 $\frac{1}{4}$  lb. packets, mixing, 1st Dipping—1 to 25 gallons water; 2nd Dipping—I to 50 gallons; thus, while in every way efficient for the eradication of scab, means a considerable saving in the cost of Dipping.

## **QUIBELL'S PASTE CATTLE DIP.**

The popularity of this famous Dip is still maintained. Its reputation for keeping Cattle and Horses in a healthy condition is known to almost every farmer.

## **QUIBELL'S Disinfectant Fluid "KEROL."**

Retains its high standard in germicidal efficiency. One bottle or drum of "Kerol" does the work of 15 bottles or drums of carbolic acid.

*It is used by the South African Governments, Municipalities, Hospitals, etc., and should be used in every Home as a preventive against Infectious Diseases, for General Sanitary Purposes, for Kennels, Poultry, Stables, etc.*

## **CHAS. W. HOLMES,**

**202, LONGMARKET STREET, PIETERMARITZBURG.**

SOUTH AFRICAN REPRESENTATIVE—

**QUIBELL BROS., Ltd., Newark (Eng.).**

# LYSAGHT'S CORRUGATED IRON

LOOKS BEST.    LASTS LONGEST.    COSTS LEAST.

---

LOWEST PRICES FOR

## FENCING MATERIAL.

### **Baerecke & Kleudgen,**

BOX 849,

DURBAN



# E. BURMESTER,

The Leading  
JEWELLER,  
WATCHMAKER,  
and OPTICIAN.

86, Adderley Street, CAPETOWN.



3 Diamonds,  
35s.



4 Diamonds, 3 Rubies, and  
3 Sapphires, £5 15s.



9ct. from 5s.  
18ct. from 14s. 6d.



All Gold  
20s.



15ct. with 1 Diamond and 1 Sapphire, £4 17s. 6d.



Real Pearls and Turquoises, 14s.

**Established 1864.**

**Write for Catalogue No. 27.**

OVER 1,000 ILLUSTRATIONS. POST FREE.



Sterling Silver  
Cabinet Photo Frame, 10s.



3 Turquoises,  
7s. 6d.



Silver, 2s. 6d.  
Gold, 14s. 6d.



Sterling Silver Watch Case,  
with Watch complete, 42s.



Silver Gilt Acorn  
Hatpin, 2s.

No Duty Payable on Goods  
sent to any part of South  
Africa.

# E. BURMESTER.

# BENTLEY & VANDERPUMP'S

## CONDITION

## POWDER.



## PREVENTS

## HORSE

## SICKNESS.

### READ THE FOLLOWING TESTIMONIALS :—

DEAR SIRs,

I have used your Condition Powder and have found it to surpass anything I had tried. My horses felt the benefit of the Powder before many days, and I find that the use of the Powder for a few days from time to time, keeps them in perfect condition and free from disease of every description.

Yours faithfully, EUGENE RENARD.

DURBAN, NATAL, September 11th, 1903.

TO LENNON LIMITED, Durban.

DEAR SIRs,

For many years past I have purchased Bentley and Vanderpump's Condition Powders as a Medicine for the Horses and Mules in use at my Brick Fields, and I must say that I cannot estimate the value of the Powders sufficiently, as my stables are always free from sickness, and I have never had any serious outbreak among my stock, which I put down entirely to the regular use of your Powders.

They seem to be the only preventive of Horse Sickness that I know of.

You are at liberty to make what use you like of this letter.

Yours faithfully, J. J. JOHNS

THE BRICK YARDS, UMGENI, DURBAN, NATAL,

September 26th, 1900.

MESSRS. LENNON LIMITED, West Street, Durban.

DEAR SIRs,

I have used Bentley & Vanderpump's Horse Condition Powders continuously during the last year or years, and am fully convinced that they act as a preventive, and I have to thank them for the fact that my horse did not take sickness last season when horses died all round me.

I am never without B. & V. Powders in the stable.

Yours faithfully, H. A. JACOB.

WENTWORTH, NATAL.

September 30th, 1903.

**THIS** Powder should be given to all Horses occasionally ; it keeps them in good condition by giving tone to the Stomach and purifying the blood. For Grease, Swelled Legs, Coughs and Influenza, it is the Best Remedy.

The dose is a teaspoonful given every night for a week, in a mash or feed of corn, and the horse can be worked as usual all the time, being in fact more fit

IN TINS AT 2/6, 9/- AND 15/- EACH.

May be obtained from Chemists and Store Keepers throughout S. Africa.

SOLE PROPRIETORS—

## LENNON LIMITED

Cape Town.  
Port Elizabeth.  
Johannesburg.  
East London.  
Durban.

Bulawayo.  
Bloemfontein.  
Graaff Reinet.  
Aliwal North.  
Kimberley.

Beaufort West.  
Oudtshoorn.  
Mafeking.  
Fordsburg.  
Germiston.

Wynberg.  
Paarl.  
Stellenbosch  
and  
London, England

BEWARE OF IMITATIONS.

# PEARL SOAP!

— WHAT IS IT? —

It is JUST THE BEST SOAP for all Household Purposes that can be bought. It is ABSOLUTELY PURE, therefore no INJURY TO THE CLOTHES. It gives a SWEET, FRESH SMELL to the clothes that is absent in other Soaps. It is not the CHEAPEST at the beginning, but, because it lasts longest, IT IS THE CHEAPEST IN THE END.

## PEARL SOAP

— IS —

## NATAL SOAP.

AND PACKED 3 TWIN TABLETS IN CARTON.

—:O:—

If you want to SAVE MONEY, and at the same time

**HELP NATAL ALONG,**

**Ask for Pearl Soap.**

SOLD AT **1s.** PER PACKET BY ALL PATRIOTIC GROCERS.

—:O:—

If your Grocer does not stock PEARL SOAP please write to the

MANUFACTURERS . . .

**NATAL SOAP WORKS, LIMITED,  
DURBAN.**



---

# Durban's 1908 Show

---

DURBAN AND COAST SOCIETY OF AGRICULTURE AND INDUSTRY

STOCK AND PRODUCE SHOW.

NATAL KENNEL CLUB'S DOG SHOW.

DURBAN AND COAST POULTRY CLUB'S ANNUAL POULTRY SHOW.

**3 GREAT SHOWS. 1 CHARGE OF ADMISSION.**

---

**1 PRIZE LIST and 1 CATALOGUE.**

---

*2 Days' Show.*

---

*1 Day's Sports.*

---

THURSDAY 16th, FRIDAY 17th, SATURDAY 18th JULY,

The third day, it is  
will be devoted to  
ing, Polo Jumping,

*At Durban.*

---

specially notified,  
the Finals of Driv-  
and Military items.

**£1,250 in Prizes.**

---

*Entries close Friday, 12th June, 1908.*

Late entries received up till 28th June, but at double rates to  
Members and non-Members alike.

————— Please send for Prize List to —————

*John Morley, Secretary 399, Smith St.*

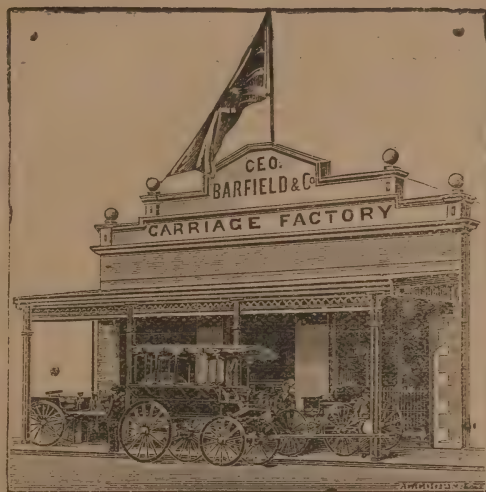


P.O. Box 21 **GEORGE BARFIELD & CO.,** TELEPHONE 391

**212, Longmarket Street, Maritzburg.**

**Builders of High-  
Class Vehicles.  
Both for Town  
and  
Country Use.**

**New and Second-  
hand Vehicles al-  
ways on Hand.**



**Estimates given  
for all kinds of  
Carriage Work.**

**Direct Importers.**

**The Trade sup-  
plied at most rea-  
sonable Prices.**

# **The Wattle Extract Co.**

**16 & 17, ANGLO-AFRICAN HOUSE,  
SMITH STREET, DURBAN.**

—BUYERS OF—

## **WATTLE BARK**

**IN ANY QUANTITY. PROMPT SETTLEMENTS ON RECEIPT OF GOODS.**

**HIGHEST PRICES GIVEN. NO COMMISSION CHARGED.**

**- - CORRESPONDENCE INVITED - -**

**P.O. Box 734.      Telegrams: "ATLANTIC."**

---

NOW READY

---

A Fruit Grower's  
HANDBOOK

BY

CLAUDE FULLER.

---

PREPARED FOR THE USE OF FRUIT GROWERS, WITH NUMEROUS  
SELECTED ILLUSTRATIONS.

---

**Price 7s. 6d., including Postage.**

---

THE TIMES PRINTING & PUBLISHING CO., LTD.,

P.O. BOX 204.

*The Times Printing & Publishing Co., Ltd.,*

*P.O. Box 204, Pietermaritzburg.*

*Please send me.....cop.....of the book entitled "A Fruit Grower's Handbook," by Mr. Claude Fuller, for which I enclose £      s.      d.*

[Sign here] \_\_\_\_\_

Address \_\_\_\_\_

---

# ACETYLENE GAS LIGHT.

BRIGHTEST, CHEAPEST, BEST.

# ACETYLENE GAS LIGHT

FOR PRIVATE RESIDENCES, CHURCHES, PUBLIC BUILDINGS, ETC

# ACETYLENE GAS LIGHT.

UNRIVALLED IN SIMPLICITY, SAFETY AND ECONOMY.

---



For Free Estimates Write to:—

Large Quantities of

CALCIUM

CARBIDE

Always in Stock.

## L. Hirsch & Co.,

ACETYLENE GAS ENGINEERS.

151, SMITH STREET, DURBAN.

P.O. BOX 518.

---

## HAYNE & CO.,

---

GENERAL BUYERS OF NATAL PRODUCE.

---

Mealies, Kafir Corn, Wattle Bark,

Mineprops, etc. etc.. . . .

---

— ADDRESS —

72 & 74, COMMERCIAL ROAD, DURBAN.

— ALSO AT —

8, HARRISON STREET, JOHANNESBURG.



# AWAY WITH THE BRUSHES!

## BEST WHITEWASHING AND DISINFECTING MACHINE.

REPLACES 10-20 MASONS.

"FIX" is employed for Painting Stalls, Walls, Dwelling Houses, Breweries, Fermenting Cellars.

—O.—

### "FIX" SPARES TIME, MONEY, AND WORK.

VARIOUS SORTS OF EMPLOYMENT.

Ask for prospectus at the administration of this Journal. AGENTS ARE DESIRED.

MANUFACTURER: **Stephan, at Scharley, GERMANY.**





# The Latest Novelty of the Day.



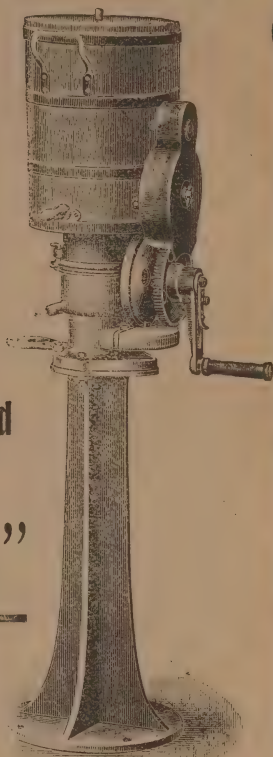
Very Important  
to  
Farmers.



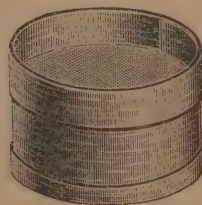
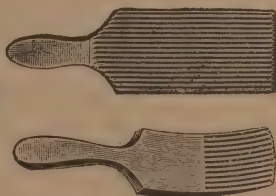
Cream-Separator and  
Churn combined.

**"The Twins."**

Skimming  
and butter-  
making done  
by this one  
machine.



ALL ACCESSORIES FOR BUTTER-MAKING SUPPLIED WITH MACHINE.



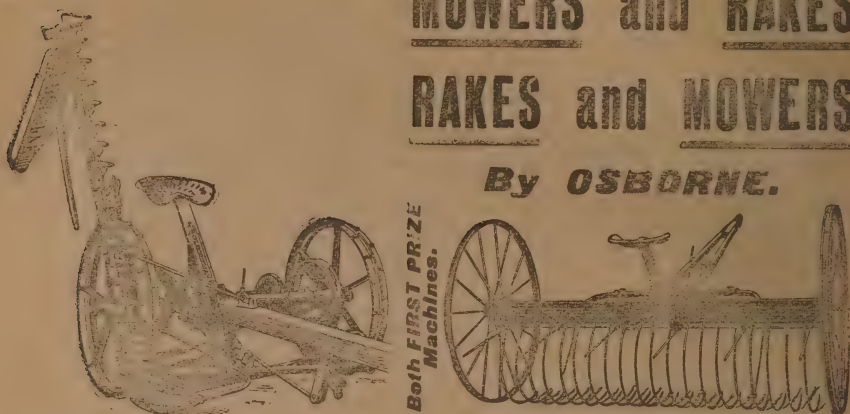
**Every farmer has his own dairy at home.**

NOTHING IS BETTER, CHEAPER OR SIMPLER FOR SMALL FARMERS.

Enquiries from Importers and Agents, stating sizes required, invited, as valuable agencies and sole rights are open to negotiation.

**HEINRICH LANZ, Mannheim, Germany.**

Germany's Greatest Factory for Agricultural Machines.  
Number of Workmen: 4,000.

**MOWERS and RAKES****RAKES and MOWERS****By OSBORNE.****OSBORNE'S 1st PRIZE VERTICAL LIFT MOWER,**

with or without **REAPING ATTACHMENT.** Every device that is practicable, durable and desirable for a Mower has been combined in the construction of this splendid machine. It has a remarkable strong frame of one solid casting, and is made large enough for all kinds of cutting, consequently the axle is held in solid bearings the entire length of the frame.

**OSBORNE'S HAY RAKE,** like the Mower, has all the very latest improvements, and has long since proved itself the best on the market.

**OSBORNE'S MOWER KNIFE GRINDER** will keep the mower knives in splendid condition.

**WEARING PARTS OR RENEWALS** for all our machines, which bear a descriptive number, are **STOCKED**, and saves our clients much inconvenience and delay.

Write early for prices and particulars.

:O:

*Steel Murray & Co.,*

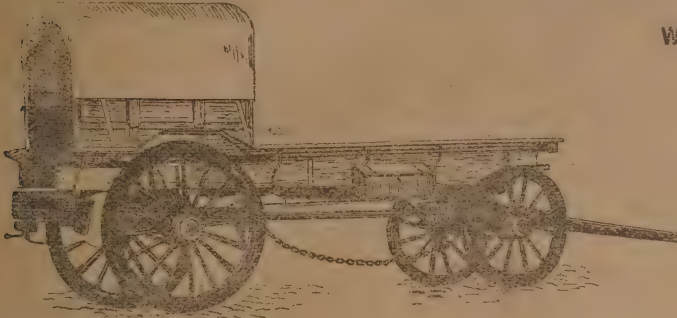
**Pietermaritzburg.**

# J. MERRYWEATHER & SONS, Wagonmakers, Blacksmiths, &c.,

Supply Wagons of every description on Shortest Notice and at Low Prices; Workmanship and Material Guaranteed. Tip Carts, Light Delivery Carts; also Light Spring Carts suitable for Farmers and Dairy-men.

**TROLLEYS, both Heavy and Light.**

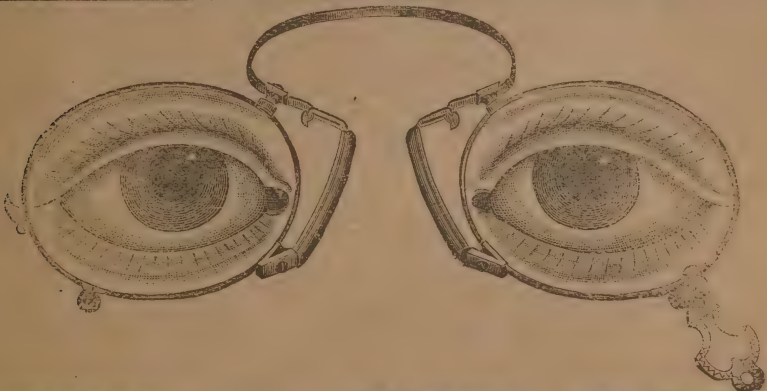
**WHEELS ARROWS.**



All Sizes of Wheels  
in Stock or Made  
to Order.

Sneezewood, Stinkwood, Stinkwood Shafts Sawn or Bent to Shape, Forgings, either for Ploughs, Wagons, or Mowing Machines.

**352, CHURCH STREET, PIETERMARITZBURG.**



**FARMERS and COUNTRY RESIDENTS**

— Who find their —

**EYESIGHT A TROUBLE,**

*Should make an Appointment with us BY POST.*

CONSULTING HOURS—Mornings, 10 to 1. Afternoons, 3 to 5.

**ELGIE & EMERSON, 49, Gardiner Street, Durban.**

F.S.M.C., LOND. (BY EXAM.),

EYE SIGHT-TESTING OPTICIANS,



Per 100  
s. d

**Best Smoke-  
less Shot  
Cartridges**

**13 6**

**Martini**

**13 6**

**Lee Enfield**

**17 6**

**Mauser**

**17 6**

**Breechloaders  
from £5.**



**HILLSDON & HILLSDON,  
FAR - KILLING GUN AND RIFLE MANUFACTURERS,  
LONDON, BIRMINGHAM & SOUTH AFRICA.**

**Capetown Depot: The ARMOURIES, 45, Burg Street.**

**F**IREARMS bearing the name of **HILLSDON** are an emblem of soundest type of Gun Construction, and the principal features are **stability, Simplicity, Strength, and Tremendous Killing Powers.**

We beg to inform our customers that the firm advertising under the name of Hillson & Hillson, Ltd., Birmingham, are in no way connected with us, and, in order to avoid mistakes, we advise our customers to send all orders and letters to our Head Depot, 16, Burg Street, Capetown, where they will receive prompt attention.

**Send for Illustrated Catalogue.**

**All New Guns and Rifles delivered Carriage and Duty Free**



---

# FERTILISERS.

---

WE ARE NOW BOOKING ORDERS FOR—

**SUPERPHOSPHATE,** ALL GRADES,

**BASIC SLAG,**

**BONE MEAL,**

**POTATO MANURE,** SPECIAL,

**POTATO MANURE** FARMER'S,

**MIXED MANURES** OF ALL KINDS,

**NITRATE OF SODA,**

**MURIATE OF POTASH,**

**AND ALL OTHER MANURES.**

---

ALL OF THE BEST QUALITY AND WITH A GUARANTEED ANALYSIS.

---

WRITE FOR PRICE LIST.

---

**P. HENWOOD, SON, SOUTTER & CO.,**  
**DURBAN**

# ODAMS' Fertilizers

QUALITY UNIFORM, AND ANALYSIS GUARANTEED.

**ODAMS' "Complete" Fertilizer** for Potatoes, Forage, and General Use.—It contains the elements necessary for vigorous and healthy plant life. Where the crops are entirely removed from the land, and nothing, or but little returned to it except in the form of cattle manure or decomposed vegetable refuse, a moderate application of ODAMS' COMPLETE FERTILIZER is calculated to maintain the soil in a state of fertility, and restore to productiveness soils exhausted by continuous cropping. This Manure for Potatoes is calculated to procure a PROLIFIC YIELD of Large Sound Tubers, without the assistance of Kraal Manure. ENORMOUS YIELDS HAVE BEEN RAISED by the aid of ODAMS' "COMPLETE" FERTILIZERS on Potatoes. It is the most economical Manure in use.

## ANALYSIS—

|                    |                          |
|--------------------|--------------------------|
| 18 to 20 per cent. | of Soluble Phosphate.    |
| 5 to 7             | " Undissolved Phosphate. |
| 4 to 5             | " Ammonia.               |
| 2 to 3             | " Pure Potash.           |

# ODAMS' Vitriolized Bones

(PURE DISSOLVED BONES).

Vitriolized Bones are very lasting in their effects, and greatly improve the productiveness of the land, being rich in undissolved Bone, Phosphates, and Ammonia. By the treatment the Bone is only partly dissolved, but all is in a softened state, suitable for the continuous nourishment and rapid growth of the plant. Bone thus Vitriolised will be found to give great permanence of fertility in all varieties of soils—and far superior results than Bone Dust or Mealies.

## ANALYSIS—

|                        |                   |
|------------------------|-------------------|
| 32 to 35 per cent.     | Total Phosphates. |
| 12 to 16               | " Soluble "       |
| 2.47 to 2.66 per cent. | Nitrogen equal to |
| 3 to 3 per cent.       | Ammonia.          |

Large Shipments of the above Fertilizers are now due to arrive, in time for the coming season, and large repeat orders from leading Natal Farmers have already been placed for delivery on arrival.

In the present state of Railway Traffic, it is very necessary that orders should be placed early to ensure despatch in time.

PRICE AND FULL PARTICULARS—

**W. DUNN & CO., DURBAN,**  
**AGENTS,**

**ODAMS' MANURE & CHEMICAL Co., LIMITED.**

BY SPECIAL  
APPOINTMENT TO



HIS EXCELLENCY  
SIR HENRY MCCALLUM,  
K.C.M.G.

# M'CRYSTAL & HARKNESS,

**Saddlers and Harness Makers,**

186, CHURCH STREET, PIETERMARITZBURG.

Postal  
Address:

P.O. 176,  
Maritz-  
burg.

## FARMERS, STUDY YOUR INTERESTS

By Buying Sound and Reliable Goods.

- THIS CAN BE DONE -

By placing your orders with

Tele-  
graphic  
Address

Saddlery,  
Maritz-  
burg

## LYLE BROTHERS,

Saddlers Harness,  
and Bag Makers.

246, Church Street, Maritzburg.

Whose endeavour has always been to give the best value at lowest possible prices consistent with quality  
Harness and Saddlery of every description made to order. Large Stocks on Hand.

**REPAIRS EXECUTED WITH NEATNESS AND DISPATCH.**

Branches—LADYSMITH. DUNDEE, AND VRYHEID

# J. Van Niekerk & Co.,

*Market and Commission Agents,*

Established 1890.

TELEGRAPHIC ADDRESS:—

"Niekerk."

## Cape Town.

Reference— Bank of Africa. —Market Branch.

Are prepared to receive consignments of Natal Fruit, etc.

**Personal Supervision.**

**Prompt Settlements.**

**Correspondence Invited.**

**Office: No. 5, Early Market, Sir Lowry Road.**

# **The Corn Exchange.** (ESTABLISHED 1868.)

**R. MASON & SON,**  
**289, CHURCH STREET, PIETERMARITZBURG,**  
**MILLERS,**  
 Grain, Produce, and Seeds Merchants.

**SPECIAL.**—Boer Meal, Crushed Wheat and Rolled Wheat (Kühne System).

**PIGEON FOODS**—Maple Peas, Hemp, &c., &c. Poultry and Chicken Mixtures. Thorley's Ovum.

**HORSE-FOOD.**—Rolled Oats, Wheaten Bran, Crushed Mealies, Molassine Meal, Rock Salt, Chaffed Forage and Lucerne, &c., &c., also Cow Meal.

**FARMERS' AGENCY.**—Consignments of Produce of all kinds realised to best advantages. Account Sales prompt with remittances.

## **SEEDS ! SEEDS !!**

We hold Prime Fresh Stocks of:—

**Mangel Wurzel, Swedes, Turnips, Sugar Beet,**  
**Paspalum, Italian and Perennial Ryegrass,**  
**Provence Lucerne, Rape (Dwarf Essex), Thousand**  
**Headed Kale, Cow Peas, Black Wattle,**  
**etc., etc.**

For description, mode of cultivation and prices, see our New Catalogue (free on application).

# **R. MASON & SON,**

THE CORN EXCHANGE SEEDS DEPARTMENT,

**289, Church Street, Maritzburg.**



# The Petrolite Lamp.

PORTABLE. INCANDESCENT.

**NO LIQUID. NO WICK.**

IF OVERTURNED GOES OUT. ACCIDENTS IMPOSSIBLE.

NO WORKING PARTS. COSTS LESS THAN PARAFFIN.

SIX HOURS OF BRIGHT, STEADY 50-CANDLE-POWER LIGHT FOR ONE PENNY.

*Awarded the Keith Prize for Safety & Economy.*

INSURANCE NOT AFFECTED BY ITS USE.

(Sole Agent)

P.O. Box 755.

John Mayhew, 2, Castle Arcade, Durban.

## HUNT, LEUCHARS & HEPBURN, LTD.,

TIMBER MERCHANTS, . . . DURBAN.

Large Stocks of TIMBER, GALVANISED IRON and all  
BUILDING REQUISITES.

Estimates given for Wood and Iron Buildings of Every Description and All  
Classes of Joinery Work

GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.

P.O. Box 455.

Telegraphic Address: "HUNT

And at JOHANNESBURG.

---

**TO SOUTH AFRICAN FARMERS, SHEEP BREEDERS AND BUTCHERS.**

---

A Common Disease of Sheep in South Africa which is often  
the cause of serious loss both to the breeder and the butcher.

## ***Nodular Disease***

---

### ***of the Intestines in Sheep.***

---

**ITS NATURE, AND HOW IT MAY BE PREVENTED.**

**By Dr. Watkins-Pitchford, M.D.**

(Assistant-Government Bacteriologist, Natal).

---

**PRICE : ONE SHILLING.**

**Post Free to any Address in South Africa, 1s. 2d.**

---

— FROM THE —

**'Times' Printing & Publishing Co., Ltd., Maritzburg.**

---

A DISEASE which is quite common in sheep throughout the whole of South Africa, but which does not appear to have been hitherto recognised and described. It occasionally causes great mortality in a flock, and is one of the reasons why Sheep cannot be satisfactorily raised in some localities.

Butchers and Breeders in South Africa have long been familiar with the appearance, in the intestines of slaughtered sheep, of little lumps of what they believe to be sand or flint embedded in the gut. In some parts of the country every sheep slaughtered is found to have these deposits, in greater or less numbers, in the intestines. When they are present even in small number the gut is quite unfit for the making of sausage skins; when they are present in large numbers the flesh of the animal is found to be so poor as to be hardly saleable.

In this pamphlet, which is illustrated by photographs, the exact nature of the disease is clearly described, how it is contracted and how it may be prevented.

A knowledge of the true nature of the disease is of great importance both to those who raise Sheep for the meat market and to Butchers.

# STEWARTS AND LLOYDS (SOUTH AFRICA) LTD.,

MANUFACTURERS OF WROUGHT IRON

## **TUBES AND FITTINGS**

FOR GAS, STEAM, AIR, AND WATER.

**BOILER TUBES.**

**WELL TUBES.**



### DURBAN STORE.

Large Stocks held in Durban and Maritzburg of all Sizes  
from  $\frac{1}{4}$  in to 12 in. English and American Thread.

**BOILER TUBES** from 2 in. to 4 in.

**All Classes of Valves and Cocks Stocked.**

**Durban Office: 310a, SMITH STREET.**

P.O. BOX 131.

Stores: **SMITH STREET.**  
**MILNE STREET.**

Telephone No. 352.

Tele. Add.: "TUBES," Durban and  
Pietermaritzburg.

Maritzburg Stores and Offices, McCALLUM STREET.

# MOLASSINE

# MEAL

***For  
Stock  
of all  
kinds.***

**Unsurpassed by any other  
Food Condiment.**

EVERY PROGRESSIVE FARMER KNOWS  
ITS VALUE AND USES IT.



**TRY IT** on any animal in low condition and  
CONVINCE YOURSELVES.

Packed in 100 lb. Bags and stocked by all Produce  
Dealers.

*RAILAGE AT S.A.P. RATES.*

For Pamphlets, etc., apply to—

**The MOLASSINE CO. (South Africa),  
LIMITED,**

**BOX 400, DURBAN.**

***Factory: MOUNT EDGECOMBE.***



**THE FOOD**

for HORSES, MULES, COWS, SHEEP,  
PIGS, DOGS, and POULTRY



---

***NOW READY.***

---

**RULES**  
FOR THE  
**COURTS OF MAGISTRATES**  
IN THE COLONY OF NATAL

To come into operation on **DECEMBER 1st, 1906**

Framed under Act 22, 1896,

**AND OTHER AMENDING ACTS,**

WITH

**The Magistrates' Courts Act**  
(22, 1896).

**AND OTHER ACTS AMENDING SAME.**

NOTED, AND WITH FULL INDEX, AND INTERLEAVED FOR NOTING  
BOUND PAPER BOARDS WITH LEATHER BACK.

(COPYRIGHT.

---

**Price 7s. 6d., or Post Free, 8s.**

---

**The 'Times' Printing & Publishing Co., Ltd.,**

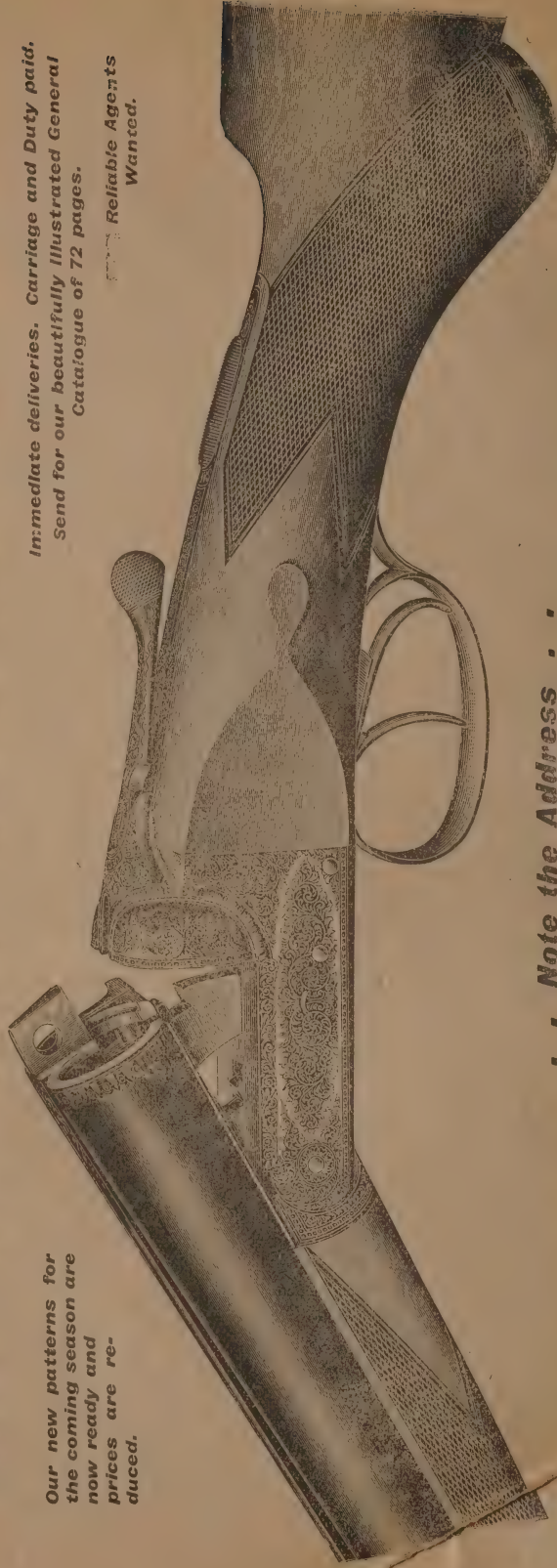
222, Church Street, and Chancery Lane, Pietermaritzburg.

**GENUINE BREECHLOADING SHOT GUNS, MAUSER, MANN-  
LICKER, LEE ENFIELD, FALLING BLOCK AND OTHER RIFLES.**

Our new patterns for  
the coming season are  
now ready and  
prices are re-  
duced.

*Immediate deliveries. Carriage and Duty paid.  
Send for our beautifully illustrated General  
Catalogue of 72 pages.*

*Reliable Agents  
Wanted.*



*... Note the Address ...*

**HILLSDON & HILLSDON, LTD., COLONIAL GUN WORKS  
BIRMINGHAM.**

N.B.—We take this opportunity of advising our customers that Messrs. Smith & Co., trading in Burg Street, Cape Town, as  
& Hillsdon, are no way connected with our Firm, and have no authority to take orders or collect moneys on our  
behalf; is with regret, but in the interest of our business that we find it necessary to insert this notice.

# Jeyes' Disinfectants

ARE THE ONLY DISINFECTANTS USED IN THE  
ROYAL HOUSEHOLD, STABLES & KENNELS . .

**RELIABLE AND SAFE IN USE.**



**Jeyes' . . .**  
**Cyllin . . .**

The strongest Fluid Disinfectant known to science, 15  
time stronger than Carbolic  
Acid, but harmless to Human  
Life.

A written guarantee of effi-  
ciency can be given.

*Can be used for Poultry, Horses, Cattle, etc., etc.*

THE CHEAPEST AND MOST EFFICIENT  
DISINFECTANT ON THE MARKET . .

**JEYES' DIP:** IS USED WITH GREAT SUCCESS  
**FLUID.)** ALL OVER THE WORLD.

**PARTICULARS FROM:—**

**FENWICK & CO.,**  
**Club Arcade, DURBAN.**



**TO FARMERS. . . .**

## *The "Times of Natal."*

### **SPECIAL NEW SCALE FOR SMALL PREPAID ADVERTISEMENTS IN PEOPLE'S COLUMNS.**

*A MOST POPULAR AND EFFECTIVE METHOD OF ADVERTISING.*

The "Times of Natal." with a view of still further popularising the paper as a medium for the insertion of "Small" Advertisements, have arranged a REVISED SCALE OF CHARGES for this class of advertisements.

Special Headings are given to "LIVE STOCK," "PRODUCE," etc., and thus Farmers announcements enjoy a particular prominence.

*This Scale only applies to advertisements accompanied by remittance. Advertisements of this class, which are not prepaid, will be charged at a higher rate.*

### **SCALE OF CHARGES.**

| NUMBER OF WORDS.          | NUMBER OF INSERTIONS. |        |         |                   |
|---------------------------|-----------------------|--------|---------|-------------------|
|                           | One.                  | Three. | Six.    | Over Six.         |
| 20                        | 1s.                   | 2s.    | 3s.     | 6d. per insertion |
| 30                        | 1s. 6d.               | 3s.    | 4s. 6d. | 9d. "             |
| 40                        | 2s.                   | 4s.    | 6s.     | 1s. "             |
| 50                        | 2s. 6d.               | 5s.    | 7s. 6d. | 1s. 3d. "         |
| Every additional 10 Words | 6d.                   | 1s.    | 1s. 6d. | 3d. "             |



# OHLENDORFF'S FERTILIZERS.

ANALYSES GUARANTEED.

*Specially prepared for South African Soils and following crops:—*

**POTATOES**

**TOBACCO**

**GRAIN & MEALIES**

**VINES**

**ROOTS**

**SUGAR CANE**

**SUPERPHOSPHATE—Basic Slag (all grades).  
BONE MEAL—Vitriolized Bones, etc. . . .**

— ALSO —

**OHLENDORFF'S STERILIZED BONE MEAL & FLOUR.**

FOR ALL PARTICULARS APPLY TO:—

**T. BURMAN, 99, Grey Street, DURBAN**

**VETERINARY PAPERS FOR FARMERS,**

—PUBLISHED BY—

**The "Times" P. & P. Co., Ltd.,  
222, Church Street, and Chancery Lane, Maritzburg.**

BUTTER MAKING. ABORTION IN COWS.

LIVER ROT AND BRAXY.

WOUNDS AND CASTRATION.

LAMENESS AND HEREDITARY

PREDISPOSITION IN HORSES.

CURE OF HORSES' LEGS AND FEET.

ANTHRAX. TUBERCULOSIS.

PARASITIC BRONCHITIS IN SHEEP,

By Professor Wortley Axe.

**Price 1s., Post, 1s. 1d.**

# G. MONHAUPT & Co.,

CABLE ADDRESS—

"MONHAUPT."

P.O. BOX 26.

TELEPHONE 308.

*The Esplanade* (Corner of  
Mona Rd.),

*Durban, Port Natal.*

— Exporters of —

Wool, Mohair, Hides, Skins, Bark, Maize and other Produce.

Woolpacks, Grain Bags and Bark Bags always on hand.

— Agents for —

BUREAU VERITAS GERMANISHER LLOYD

CLASSIFICATION OF SHIPS.

ASSOCIATIONS OF HAMBURG AND BREMEN UNDERWRITERS.

— SETTLEMENT OF CLAIMS. —

## ***Agricultural Pests***

... WITH ...

... **METHODS OF PREVENTION,**

... BY ...

**MISS E. A. ORMEROD,**

Late Consulting Entomologist to the Royal  
Agricultural Society (of England).

**Price 1s. By Post, 1s. 1d.**

**The Times P. & P. Co., Ltd., Maritzburg.**

---

— THE —  
**“Times of Natal.”**

(Established 1851.)

***Two Editions Daily.***

---

**The Best Paper for Farmers.**

---

**Two Columns Daily on Agricultural Topics**

---

***Full Cable Services.***

***Latest Transvaal & Natal Trade & Market Reports.***

***Interesting Special Features.***

***Local and District News.***

---

**SUBSCRIPTIONS :**

NATAL AND ZULULAND:—Daily, £1 6s. per annum; including Weekly Edition, £1 10s.; Weekly Edition only, 12s

OTHER PARTS OF SOUTH AFRICA.—Daily, £2 per annum; including Weekly Edition, £2 12s.; Weekly Edition only, 18s.

UNITED KINGDOM AND BRITISH COLONIES.—Daily, £2 10s. per annum; including Weekly Edition, £3s. 2s.; Weekly Edition only, £1.

---

**Printing, Publishing and Advertising Offices :**

222, Church Street, and Chancery Lane, Maritzburg.

# **FENCING MATERIAL**

Large Stocks of Barbed and Plain Wire  
Standards and Straining Posts.

## **— GATES, —**

Cyclone Droppers (or Pickets) and Loops  
in Stock or Made to Order.

Also Cyclone Patent Lever Gate.

## **CYCLONE GATE & FENCE CO., LTD.,**

315, CHURCH STREET (Opposite Market Square).

Telegrams—"CYCLONE."

BOX 289.

P.O. BOX 879.

Telegraphic Address: MILLING, DURBAN.

## **The Natal Mill Elevator Co.**

Bankers: The Natal Bank, Ltd.

**Mills: UMBILO.**

**Offices: 319, SMITH STREET, DURBAN.**

—WE ARE—

**BUYERS OF MEALIES AND WHEAT**

—IN ANY QUANTITY—

\* FOR CASH. \*



# J. A. PETERS,





## Forage & Corn Merchant,

### Army Contractor,

## 184, Commercial Road,

## **MARITZBURG,**

Has for Sale at Lowest Rates:—

|                                                                                     |                                                                                                                                         |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                        |
|                                                                                     | <p><b>French Early Rose Seed Potatoes</b><br/>(just arrived).</p>                                                                       |
| RACE                                                                                | <p><b>Algerian Seed Oats</b> (reputed rust-resisting).</p>                                                                              |
| HORSE                                                                               | <p><b>Lucerne Seed.</b></p>                                                                                                             |
| FOOD                                                                                | <p><b>Compressed Fodder</b> (American and Australian), <b>Lucerne</b>, <b>Australian</b> and <b>American Bran</b>, <b>Oil Cake</b>.</p> |
| A                                                                                   | <p><b>Best Whole and Rolled Feed Oats.</b></p>                                                                                          |
| SPECIALITY.                                                                         | <p><b>Pigeon Peas</b>, <b>Fowls' Food</b>, <b>Oyster Shell</b>.</p>                                                                     |
|  |                                                      |
|                                                                                     | <p><b>Coolie Rice</b>, <b>Dholl</b>.</p>                                                                                                |
|                                                                                     | <p><b>Training and Ordinary Feed Forage</b> always on hand, and all kinds of <b>Produce</b>.</p>                                        |

**COLONIAL PRODUCE BOUGHT AND DELIVERY TAKEN  
AT ANY RAILWAY STATION.**

Postal Address: 'P.O. BOX 197

Telegrams: "PETERS."



### ***Stud, Stock, and Farm.***

**RATES OF CHARGES.**—20 words for 3 months, 3s. 30 words for 3 months 4s. 6d. 40 words for 3 months, 6s. Intending advertisers are requested to communicate with the Publishers direct.

#### ***STUD.***

**P. D. KIMBER, MARITZDAAL, THE DARGLE.**—Breeder of P. Yorkshire Coach Horses, Cleveland Bays, Hackneys, and Pure-Breed Shetlands. Stallions, Mares, Young Stock, Saddle Horses, Remounts and Well-Matched Pairs always on sale. Young Horses selected privately trained to saddle or harness to suit purchasers. Also Breeder of Shorthorn Cattle.

**P. OTTO, J.P., SOMERVILLE, RIET VLEI,** Breeder of Pure-Breed P. FRIESLANDS, RAMBOUILLET RAMS, AYLESBURY DUCKS, DORKINGS, AMERICAN BRONZE TURKEYS.

**WILLIAM WOOD, "WOODFIELD" STUD FARM, NOTTINGHAM ROAD.**—Breeder of Pedigree and Grade South Devon Cattle (heavy milking strain). Milk register kept. Young Bulls for sale. Also Shropshire Down Sheep (prizes won last season included a championship, open to all breeds).

#### ***STOCK.***

**PURE-BRED MIDDLE WHITE YORKSHIRE PIGS** for Sale; Boars and Yelts; always on hand.—**C. HINGESTON, Sutherlands P.O., near Maritzburg.**

**PEDIGREE** large Yorkshire and Tamworth Pigs, also some half-breeds.—**Messrs. MILLER & STEPHENS, Tafira, Batstones P.O.**

## Index to Advertisements.

---

|                                      | PAGE.    |
|--------------------------------------|----------|
| Agricultural Pests, etc,             | 28       |
| Baerecke & Kleudgen                  | 2        |
| Barfield, George, & Co.              | 7        |
| Bifurcated & Tabular Rivet Co., Ltd. | 32       |
| Burmester, E.                        | 3        |
| Cooper, Wm., & Nephews               | viii.    |
| Cotts, Wm., & Co.                    | v., vi., |
| Cyclone Gate & Fence Co., Ltd.       | 30       |
| Dunn, W., & Co.                      | 16       |
| Durban's 1908 Show                   | 6        |
| Elgie & Emerson                      | 13       |
| Fenwick & Co.                        | 25       |
| Fruit Grower's Handbook              | 8        |
| Hayne & Co.                          | 9        |
| Henwood, Son, Soutter & Co.          | 15       |
| Hillsdon & Hillsdon                  | 14       |
| Hillsdon & Hillsdon                  | 24       |
| Hingeston, C.                        | 32       |
| Hirsch, L., & Co.                    |          |
| Holmes, Chas. W.                     | 1        |
| Hunt, Leuchars & Hepburn, Ltd        | 19       |
| Imber, P. D.                         | 32       |
| Reinrich                             | 11       |

# INDEX TO ADVERTISEMENTS.

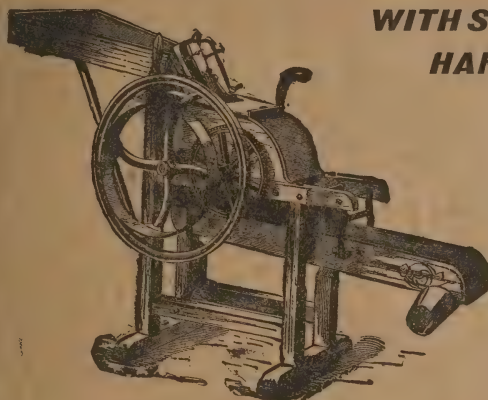
|                                            | PAGE.                 |
|--------------------------------------------|-----------------------|
| Little's                                   | 10                    |
| Lennon, Ltd.                               | 4                     |
| Lyle Brothers.                             | 17                    |
| Malcomess & Co., Ltd.                      | (Cover—back, inside)  |
| Mason & Son                                | 18                    |
| Mayhew, John                               | 19                    |
| McCrystal & Harkness                       | 17                    |
| Merryweather, J., & Sons                   | 13                    |
| Miller & Stephens                          | 32                    |
| Molassine Co., Ltd., The                   | 22                    |
| Monhaupt, G., & Co.                        | 28                    |
| Morrisse, Hubert, & Co.                    | ii.                   |
| Natal Direct Line                          | iv.                   |
| Natal Mill Elevator Co., The               | 30                    |
| Natal Soap Works, Ltd.                     | 5                     |
| Niekerk, J. van, & Co.                     | 17                    |
| Nodular Disease of the Intestines in Sheep | 20                    |
| North, G., & Son                           | vii.                  |
| Ohlendorff's                               | 27                    |
| Otto, P.                                   | 32                    |
| Peters, J. A.                              | 31                    |
| Raw, J., & Co.                             | iii.                  |
| Riekie & Co.                               | iv.                   |
| Rules of the Courts of Magistrates         | 23                    |
| Simmons, P. D.                             | (Cover—back, outside) |
| South African Fertilizers Co., The         | i.                    |
| Steel Murray & Co.                         | 12                    |
| Stephan's                                  | 10                    |
| Stewart & Lloyds                           | 21                    |
| Wattle Extract Co., The                    | 7                     |
| Wilson, J. M.                              | iv.                   |
| Wood, William                              | 32                    |



# **The "Lightning"**

## **Mealie Sheller (2-hole),**

**WITH SHAKER, FEED TRAY,  
HANDLE and Pulley.**



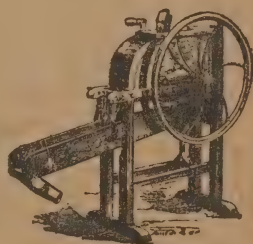
The great popularity of the "LIGHTNING" Sheller is due to its sterling merits and moderate price. There is no better hand power sheller on the market is the verdict of all users. Clears all mealies from the cobs and thoroughly sifts them. This season the "LIGHTNING" has been fitted with

improved bearings and journal boxes of the latest type, which greatly increase the easy running of the machine, and absolutely prevent the shelling wheels getting out of line.

### **TESTIMONIAL.**

J. L. MCKENZIE. New Windsor, Richmond.

"I am very well pleased with the 'LIGHTNING' Sheller. I have shelled 80 bags of mealies with it in a day starting at 9 o'clock in the morning, weighing and bagging at the same time. It cleans the cobs well, and sifts them sufficiently to bag straight away. It is as good now as when I got it at the beginning of last season.



### **Our MARSEILLES-ADAMS.**

A new small power sheller which shells mealies with the husks on.

**"INVINCIBLE."**  
A One-Hole Sheller of  
same design as the  
"Lightning."

WRITE FOR SPECIAL SELLER CIRCULAR.

## **Malcomess & Co., Ltd..**

ESTABLISHED  
1870.

## **East London &**

---

# AT STUD

---



For Season 1908,

**THE THOROUGHBRED HORSE**

---

**"BAY LAWN."**

---

**By 'Green Lawn,' by 'Kendal,' etc.  
Out of 'Tester,' by 'Fernandy,' etc.**

"BAY LAWN," is a sure foal-getter and runs with mares by day. He is winner of many races. 1st at Durban Show (only time shown).

**FEE—7 GUINEAS** for blood mares and moderate fee for ordinary mares, with reduction for two or more. Free summer run.

---

**- FOR SALE -**

Shorthorn Bulls, Cows and Heifers, Shropshire Down Rams and Ewes,  
Riding and Driving Horses, Milk Cows.

**POULTRY.**

Plymouth Rocks, Buff Orpingtons, Black-Red Old English Game, White Wyandottes, Old English Game Bantams, Rouen Ducks, English Wild Ducks.

---

**For Lease** in September and forward, Blood Pony Fillies by "ARCANO." Many of this strain are winners, which includes "CHARITY CLOAK" (one of the best ponies ever bred in South Africa); "ARCANE" (champion pony in South Africa for his height); "VOLCANO," "ARCANESS," and many others.

---

ly—

**D. Simmons,**

**Mooi River, Natal**

ADVERTISEMENTS.

i.

# **SAFCO**

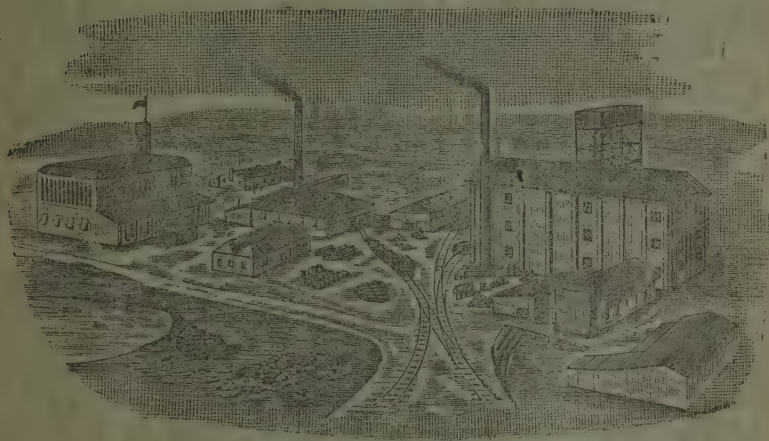
---

## **FERTILIZERS -**

---

—ARE USED BY ALL—

**UP-TO-DATE and PATRIOTIC FARMERS.**



SAFCO WORKS, UMBILO.

**SAFCO Fluid Dip.**

**SAFCO Powder Dip.**

**SAFCO Cattle Lick.**

**Vaporite.**

**THE SOUTH AFRICAN FERTILIZERS CO.**

TELEGRAMS: **UMBILO, DURBAN.** TEL. No. 2



ii.

ADVERTISEMENTS.

BY SPECIAL  
APPOINTMENT TO



HIS EXCEL  
HIGH COMMISSIONER

P.O. Box 63.

Tel. Address :

# HUBERT MORISSE & CO.,

PRODUCE AND LIVE STOCK  
COMMISSION AGENTS,  
**JOHANNESBURG.**

~~~~~  
PRODUCE & LIVE STOCK OF EVERY DESCRIPTION
SOLD ON COMMISSION.

~~~~~  
Cash Advances made on Goods sent for Immediate Sale.

Write for our Weekly Market Reports, sent Free on Application.

**PROMPT SETTLEMENTS.**

Correspondence Invited.

Bankers : A.B.C., Ltd.

~~~~~  
MAIN STORES :
Corner Loveday and Frederick Sts.
BRANCH AT OPHIRTON.

636.5

NA

V. 11

No. 7

Vol. XI., No. 7.

JULY 31, 1908.



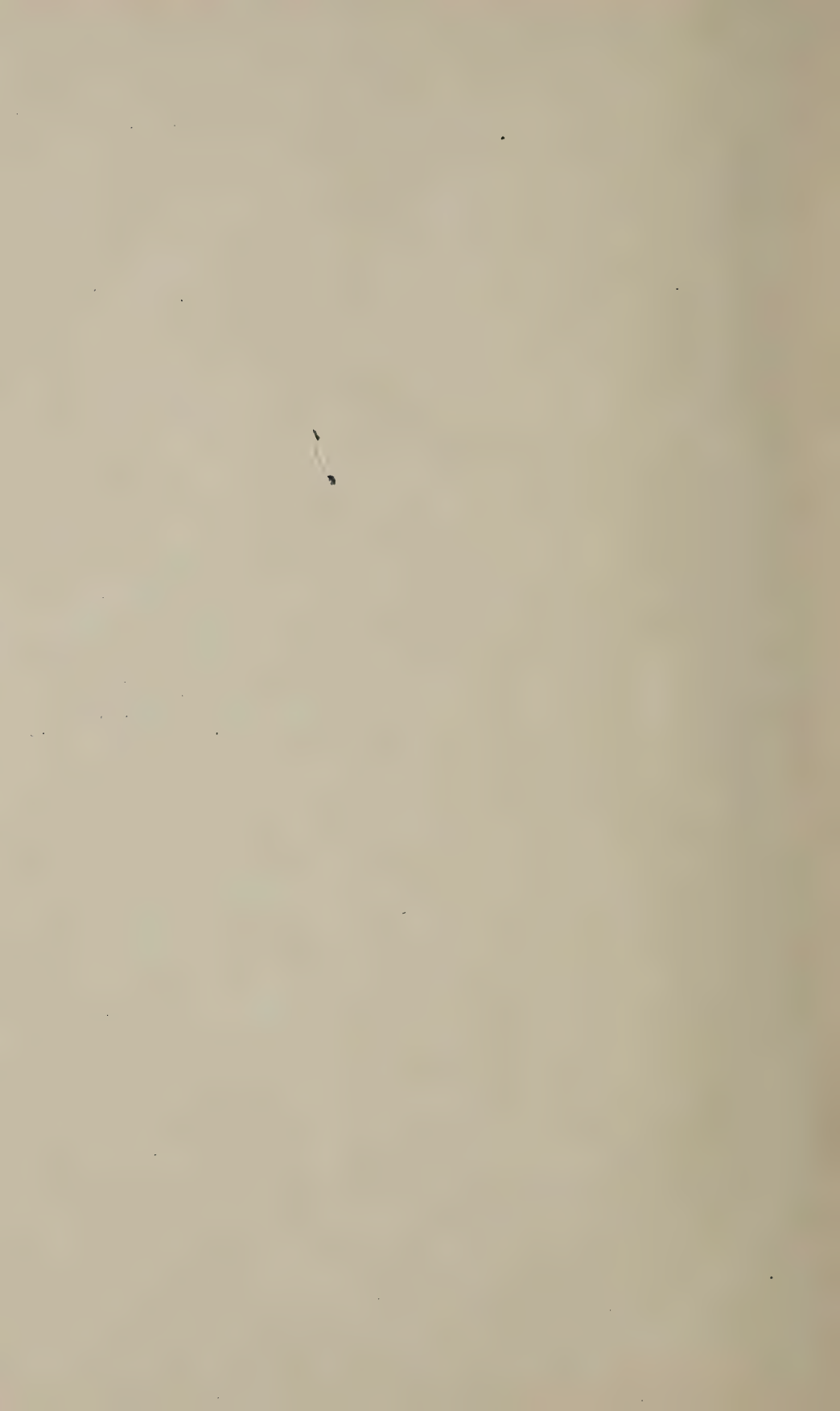
. . . THE . . .
NATAL
AGRICULTURAL
JOURNAL

Published for and Edited in the Department of
Agriculture.

Publishers :

THE "TIMES" PRINTING AND PUBLISHING COMPANY, LIMITED,

1908,

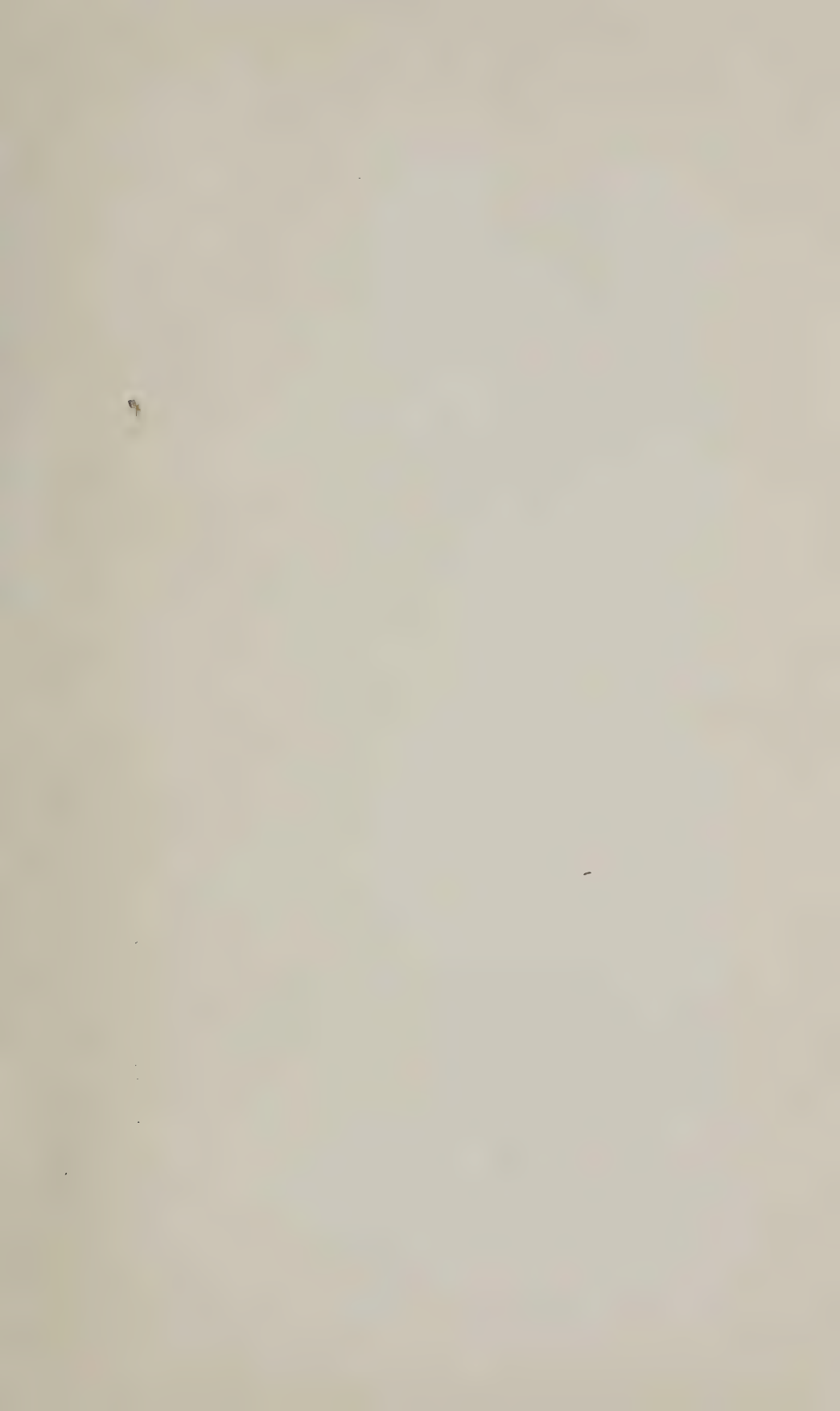


CONTENTS.

	PAGE
AGRICULTURE, CEDARA SCHOOL OF : Annual Prize Distribution ..	820
AGRICULTURAL CONDITIONS IN JUNE : The Weather, Crops and Live Stock ...	912
AGRICULTURE, INTERNATIONAL INSTITUTE OF	816
AGRICULTURAL STATISTICS	811
AGRICULTURAL UNION, CAPE : Eleventh Annual Conference : Report of Pro- ceedings	825
AMONG THE FARMERS : The Associations during the Month	899
APPLES FOR TRANSVAAL	813
BACON FACTORY, NEL'S RUST	813
BEE-KEEPER, THE CHEMIST AS	816
BERENBERG, MR. H. VON P.	814
"'BLUETONGUE,' REPORT ON "	812
BOYS TO FARMERS, INDENTURING WHITE	818
CAPE AGRICULTURAL UNION : Eleventh Annual Congress : Report of Pro- ceedings	825
"CATERPILLAR " ENGINE : A Novel Method of Traction	890
CATTLE, NATAL, AND THE TRANSVAAL	815
CEDARA SCHOOL OF AGRICULTURE : Annual Prize Distribution	820
COAL AND LABOUR RETURNS	921
CORRESPONDENCE :	
Natal Seed Mealies : Fritz Reiche	910
DEPARTMENTAL NOTICES :	
Diamond Drilling	929
E.C.F. Brands Allotted to Infected Magisterial Divisions	925
Employment Bureau	925
Experiment Station Notices	930
Government Abattoirs and Cold Stores	932
Lungsickness and Scab, Farms under Licence for	922
Publications Issued by the Department	933

CONTENTS—continued.

	PAGE
DURBAN AND COAST SOCIETY OF AGRICULTURE AND INDUSTRY: Annual Agricultural Show	886
EAST COAST FEVER LEGISLATION IN O.R.C.	817
ENGINE, "CATERPILLAR"; A Novel Method of Traction	890
EXCHANGE REVIEWS: What Others are Thinking and Doing	906
FARMERS' ASSOCIATIONS, EXECUTIVES OF	926
FORESTS OF EUROPE: How they are Conserved.—I.	875
GARDENING NOTES FOR AUGUST: By W. J. Bell, Nurseryman, Seedsman & Florist	911
INDENTURING WHITE BOYS TO FARMERS	818
IRRIGATION MACHINERY: Mr. Theo. Rositzky's New Installation	893
LABORATORY NOTES. By Alex. Pardy, F.C.S., Analyst	896
LAND BOARD, NATAL: Monthly Meeting	895
LOCUST DESTRUCTION: Report on 1907-8 Campaign. By Albert Kelly	865
MACHINERY, IRRIGATION: Mr Theo Rositzky's New Installation	893
MAIZE CROP	812
MAIZE, RAILWAY RATES ON	813
MAIZE SHELLER, A NEW	814
MARKETS, THE: South African and Oversea Notes and Prices	914
METEOROLOGICAL RETURNS	924
MILLS AND MILLING: A Paper read before the Newcastle Chamber of Commerce. By W. Beardall	851
NOTES AND COMMENTS	812
NURSERIES, INSPECTION OF	818
PERSIAN-MERINO CROSS, A	815
POULTRY-KEEPING IN A SIMPLIFIED EDITION FOR FARMERS (<i>continued</i>)	844
POUND NOTICES	923
STATISTICS, AGRICULTURAL	811
WATTLE BARK AND TREES, ANALYSES OF	861
WATTLE BARK MARKET, THE OVERSEA: Natal and Australian Barks: Differences Explained	881
WATTLE BARK SITUATION, ANOTHER PHASE OF THE	809





MR. P. IRELAND IN HIS APIARY.
(See "Notes and Comments.")

The Natal Agricultural Journal.

Another Phase of the Bark Situation.

WE publish this month further interesting information regarding the wattle bark industry which we commend to the careful perusal of our readers. Specialised as the wattle industry has become, it is, unlike many others of our agricultural industries, one which is of general interest. We see this partly in the fact that there are some 90,000 acres of land under wattles, and that this land is spread over all the Magisterial Divisions of the Colony. The future of this industry is the concern of, we would imagine, more than half the farmers of the Colony; and it is on the future of the industry that we have for nearly a year past from time to time published information—chiefly collected through the Agent-General for Natal.

The information which we publish this month—as well as some of that which appeared in our May issue—was collected by Mr. Harrison, the recently appointed Commercial Agent of the Colony, who has been particularly energetic in collecting all particulars available as to the actual situation of Natal bark upon the London market. The particulars appearing in the present issue are properly speaking an extension of the necessarily brief information contained in the cable appearing on page 602 of the May *Journal*. That cable we may repeat for the reader's convenience. It reads:—

“Referring to your telegram of 8th May, wattle bark, London, c.i.f., market prices are—Natal £7 10s., and Australian £8 to £10. Rate of freight on latter 35s. Difference in price due to small quantities, superiority bark finely ground. 760 tons exported from Australia last year. No reports of increase in exports.”

This cable very succinctly sums up the main points of importance in a phase of the wattle bark situation which has been causing a little anxiety in the minds of prominent wattle men in this country. Australia has always been regarded more or less as a possible competitor in the future, but the results of Mr. Harrison's inquiries which we publish dispel all fears as to the future. In the first place, Australia's wattle bark exports,

never very great, are decreasing. In 1906 they appear to have amounted to 760 tons. This figure is insignificant alongside Natal's 23,800 odd tons of 1907. We have said that Australia's exports are, on the whole, decreasing. Were they stationary or even normally increasing—that is, without any violent fluctuations—we should necessarily have to look in another direction than that of quantity for reasons for regarding Australia as a serious competitor. The factors concerned are disclosed in the correspondence published in this issue, as well as, to some extent, briefly in the cable quoted above. First, we have the fact that the Australian bark is marketed in a more finely ground condition. That fact, it would appear, serves to some extent to enhance the price of the bark; but at the same time it will be noticed that our bark is preferred in a chopped state, such as it is at present shipped, the reason given being that tanners prefer to grind the bark themselves, in order to have it in a fresh state. The two statements are not, for the time being, reconcilable. In the second place, Australian bark contains, apparently, a higher percentage of tannin, and much of it is sold to London upon a guaranteed tannin content. The latter is an important point, to which we would, in passing, draw the attention of Natal wattle shippers. The adoption of some such plan here—if found feasible—would go to enhance the price of our bark in London. Australian bark would appear to range in tannin content from 30 to 50 per cent., while Natal's percentage is given by comparison as 30. The difference, however, does not appear to be sufficiently important to counterbalance other advantages which Natal bark possesses over Australian, judging from the fact that German tanners prefer the bark from Natal, as well as do many English houses. Again, the preference shown by some English tanners to Australian bark is put down to conservatism, and not to any real disadvantages on the part of our bark.

These appear to us to be the main points of the situation, and it accordingly will be evident that we have nothing to fear as regards Australian competition. This opinion is strengthened by a statement made in the correspondence published, in connection with the decreasing exports of Australian wattle bark, namely, that the Australian consumption of bark for tanning purposes is increasing. This is indicative of a growing tanning industry in Australia, and such a state of things will be welcomed by Natal wattle-growers.

At the end of the article in this issue will be found a copy of letter which was addressed originally to the Editor of the *Natal Mercury* by Messrs. Boucher, Mortimer & Co. It has been forwarded by Mr. Harrison, and we re-publish it in our pages as it represents the opinion of a well-established firm of brokers on the recent suggestion regarding the manufacture of wattle extract locally in preference to shipping bark. This letter also we would draw attention to; and it will be found to confirm the views already published in the May issue of the *Journal*.

Agricultural Statistics.

WITH the close of the agricultural year comes the organisation of the annual work of collecting statistics relative to farming operations which have taken place in the Colony during the previous twelve months. The Department of Agriculture is now making preparations for the prosecution of this year's work, and when these lines meet the reader's eye the bulk of the schedules will be addressed and ready for despatch to the farmers of the Colony. Owing to financial considerations the Government has found it necessary to delete from the Estimates the sum which has in the past provided payment for district collectors of agricultural statistics; and in consequence it has been decided by the Department of Agriculture to collect the usual returns by corresponding with the farmers direct. A memorandum on the subject of agricultural statistics, setting forth their value and consequent need for their collection, is being enclosed with every schedule despatched, and it is consequently unnecessary for us to go into the reasons why such statistics should be annually collected. We might, however, in order briefly to indicate the reasons for compiling statistics, compare a country with a private firm, who, in order to keep themselves fully acquainted with their general position—to be able from time to time to ascertain whether they are progressing or otherwise—keep a set of books in which are recorded details of their various operations, which, when balanced, reflect accurately the financial standing of, and the progress made by, the company concerned. In the same way statistical abstracts and statements published by a country furnish the sole means of accurately estimating the progress made by the country during the period covered, and thus give rise to a great number of uses into which we cannot now enter, but which are in part described in the memorandum referred above. This memorandum, of course, takes into consideration agricultural statistics only; these statistics, however, read in conjunction with the Customs statistics, furnish the only really reliable means of gauging a country's progress, and we trust that the farmers of the Colony who may for various reasons be adverse to supplying the information asked for in the schedules will give the matter full consideration and decide to assist the Department.

The chief objection levied against the collection of these statistics is that the information is required in connection with the framing of taxation measures. This, however, is quite an erroneous idea, the figures being used for no other purpose than for the compiling of statements—which are published eventually in the *Statistical Year Book*—in which all individual figures are lost (since only totals for Magisterial Divisions are dealt with). The forms themselves, when once the figures have been

copied from them, are filed for a year and then destroyed. Only three persons, as a matter of fact, ever see the forms. Another objection on the part of a few farmers is that the Department is enquiring about their private business, and they are consequently averse to making public (as they consider) information relative to their farming operations. In reply to this objection we can assure farmers that all figures supplied by them are treated as strictly confidential: as we have already said, only three officials ever see the forms, and these are officers who are actually concerned in the collection and compilation of the returns.

Most of the forms will be despatched on or about the 1st of August, and we hope that farmers will assist the Department by filling in the forms and returning them at the earliest possible date in the post-free envelopes which are also being sent to them. Farmers who have any difficulty in understanding the nature or scope of the information required should communicate with the Statistical Officer of the Department of Agriculture, who will be glad to answer any enquiries.

Notes and Comments.

“Report on ‘Bluetongue.’”

The third instalment of Mr. H. Watkins-Pitchford's Report on the Sheep Disease known as “Bluetongue” is held over from the present issue, as there are certain details in it which, owing to pressure of other work, Mr. Pitchford has been unable to complete. In our August issue, however, the series will be continued.

The Maize Crop.

For some time past farmers have been busy reaping their mealie-crops, and harvesting is now practically everywhere finished. We have made a final estimate of the crop, which now, we find, works out at approximately 850,000 muids. Our last estimate set the probable crop down at 800,000 muids, but favourable factors subsequently ensued, increasing the probability of a good crop. Even 850,000 muids, although fairly large for the Colony, is not as great a return as we might have had, considering the stimulus which was given to the cultivation of maize by the inauguration last year of a Government export scheme. Had it not been for such unfavourable factors as untimely rains, drought, hail, mealie-grab and early frost, we think the total European crop would have amounted to quite a million muids.

Nel's Rust Bacon Factory.

We are informed by Mr. Eadie, the Secretary of the Nel's Rust Bacon Factory, that the Railway Department has now completed the siding at the site of the new factory, and that, consequently, the construction of the factory itself will now be proceeded with without any further delay. It is anticipated that the factory will be in full working order by the end of the year, or possibly before. Before the completion of the factory the Directors will be arranging for the purchase of live stock.

Apples for Transvaal.

For some time past consignments of apples, affected with the "black rot" fungus (*Sphaeropsis malorum*, Peck.), have been arriving in the Transvaal from the Cape Colony, where the disease appears to be prevalent both in the Eastern Districts and at the Paarl. The Transvaal Government has accordingly decided, in order to safeguard the interests of local fruit growers, to order the destruction, or return to the consignor, of all pomaceous fruits found infected with this fungus to the extent of one per cent., and upwards. Fortunately the disease does not exist to any great extent in Natal, but exporters of apples to the Transvaal are nevertheless advised to see that all their consignments to that Colony are clean before despatch.

Railway Rates on Mealies.

The General Manager of Railways has notified that, with effect from the 1st August, mealies forwarded from Natal Government Railway Stations to the Point for export oversea beyond South Africa will be charged at a rate of $\frac{1}{2}$ d. (half-penny) per ton (2,000 lbs.) per mile, subject to a minimum of 5s. (five shillings) and a maximum of 10s. (ten shillings) per ton (2,000 lbs.) Maize conveyed at the export rate is carried at *owner's risk*. This rate includes loading and offloading and only applies to truck loads of not less than 20 tons, or paying therefor. The maximum rate includes the service of placing the maize on board steamer at the Port; but in the case of maize consigned through the Government Agency to the Agent-General in London, an additional sum of 1s. 4d. per ton will be added to cover this service where the export rate amounts to less than 10s. per ton, providing that in no case shall the total rate, exclusive of shipping, exceed 10s. per ton. Maize not dealt with by the Government Agency, and which is conveyed at a rate exceeding 8s. 8d. per ton, will be subjected to a rebate of the difference between the rate paid and 8s. 8d. per ton, on production of satisfactory proof that shipment has actually been made. The export rate only applies to maize which has been graded by and bears the official stamp of the Government Grading Officer. To secure the application of the export rate mealies must be conveyed in new and doubly sewn $2\frac{1}{2}$ lb. bags.

Mr. H. von P. Berensberg.

The many friends of Mr. H. von Pelser Berensberg, who has recently severed his connection with the Entomologist's Branch of the Department of Agriculture, will be interested to hear that he has organised the "Natal Fumigating Company," with offices in the Chamberlain Buildings, 221a, Smith Street, Durban, and that he is consequently prepared to undertake the cleaning of orchards, nurseries, gardens, etc., from insect and fungus-pests, as well as the fumigation of houses and premises, and similar work. This is a line in which there is an opening for commercial enterprise in Natal, and we wish Mr. Berensberg every success in his new undertaking.

A New Mealie Sheller.

A machine that is capable of shelling, dressing, and making ready for the market from 27,000 lbs. to 33,750 lbs., or 135 to 168 muids, per hour, is undoubtedly invested with strong attractions for large growers of this cereal. This capacity is, it is affirmed, well within the compass of a machine which is now being built by Messrs. Robey & Co., Ltd., of the Globe Works, Lincoln. In this apparatus, we are told by the *Implement and Machinery Review*, are embodied modern principles of mealie shelling, elevating, dressing, and bagging, whereby manual labour is reduced to a minimum; and it is noteworthy, as the *Review* points out, that the small grains and the offal, the large cobs, and the chaff and broken cobs, are all put separately in different bags straight from the machine, the dust only being blown away. The refuse or bad heads can, on account of the special construction of the elevator, be separated before they reach the shelling cylinder, and bad grains are thus prevented from spoiling a good sample. The hopper of the elevator is of ample size, and is near the ground; and the lower end of the elevator is adjustable to suit the different quantities of maize to be shelled.

The shelling apparatus consists of a cylindrical cage formed of steel bars enclosed in a steel casing. This is securely fastened to the frame of the machine. Within this revolves a spindle with helical steel plates, by means of which the grains are rapidly separated from the cobs without injury to themselves, leaving the mealies to fall upon a series of riddles, where they are exposed to a strong blast, by means of which the large and small grains and refuse are separated and delivered into different bags. The machine is made in three sizes, 4 ft., 4 ft. 6 in., and 5 ft. wide. For dealing with the quantity of mealies referred to in our opening paragraph, the sheller requires an 8 n.h.p. portable engine for driving purposes; while the output of the machine depends, of course, upon the quality of the mealies treated.

Natal Cattle and the Transvaal.

Under Government Notice No. 583 of 1908 the Transvaal Government has cancelled the regulations made under the Stock Diseases Ordinance of 1902 relative to the importation of cattle from Natal, and has substituted the following therefor, viz.: "(1) No person shall import any cattle into this Colony [Transvaal] from the Colony of Natal, and any person contravening this regulation shall be liable on conviction to a fine not exceeding fifty pounds, and in default of payment to imprisonment with or without hard labour for a period not exceeding six months. (2) Any cattle which may, after the date of the promulgation of these regulations, come into this Colony from the Colony of Natal may be seized by any resident magistrate, native commissioner, fieldcornet, sub-commissioner of Natives, justice of the peace, police officer or constable, and detained and taken to a place of isolation, and the person so seizing and detaining such cattle shall immediately report all the circumstances to the Minister of Agriculture, who may order any such cattle to be slaughtered or otherwise dealt with."

A Persian-Merino Cross.

The following interesting extract from the May issue of the *American Sheep-Breeder* has been forwarded by a correspondent:—"In answer to your request to send you a picture of the new cross of Persian Merino, I enclose you a picture of three lambs taken at random from a bunch of 126 head, raised on my ranch near Los Angeles. The Persian ram is rather leggy, weighs 240 lbs., wool light and long, a slightly reddish colour at base shading to white, sheared 13 lbs. for eight months' growth. Ears long and drooping; Roman nose. The ewes bred to him were in-bred Merinos, heavy woolled and good size, sheared 14 lbs. for 12 months' clip. The ewes are not noted for their prolificacy, nor are they specially good mothers, usually have one lamb; still out of 80 ewes, 126 lambs were dropped—one morning five pairs of twins out of six ewes. The lambs are all red-bodied with white faces and tails, unusually large and strong at birth, and need no assistance. The lambs shown in the picture were dropped beginning 12th December, 1907. The picture was taken 10th April, 1908, so that they cannot be over four months at most. One ram lamb weighed 103 lbs., the other two ewes weighed 96 and 91 lbs. respectively: not so bad for lambs that have not had any corn or special care at all. In the test made at our ranch last week, the result was as follows: lamb weighed alive 69½ lbs.; market dressed it weighed 37½ lbs., hind leg 5¾ lbs. The meat is whiter than that of any other mutton, the flavour more delicate, and the shrinkage less than that of any other breed we have killed. For early, hardy, strong growing, hungry lambs, that will weigh 70 lbs. at 90 days old, these are hard to beat."

International Institute of Agriculture.

On the evening of Saturday, 23rd May, took place the inaugural ceremony of the International Institute of Agriculture in the presence of His Majesty the King of Italy, who attended in state and formally opened the new building erected for the use of the permanent delegates. The *London Times* states that the new building is situated within the gardens of the Villa Borghese, on rising ground immediately upon the left of the main entrance. The architect, Signor Passerini, may be congratulated on having devised an edifice which is worthy of its beautiful surroundings; also on having wisely spared, as far as was possible, the pine trees which once crowned the height and still almost conceal the new palace from view. The palace, which is the gift of the King of Italy, is of considerable size, and contains meeting rooms, reception rooms, and private rooms for the delegates resident in Rome. Besides the palace itself, King Victor Emmanuel has generously endowed the Institute with an income of £12,000 a year, which, added to the contributions of those countries which have joined in the scheme, will make a total of about £40,000 a year to defray its expenses.

The Chemist as Bee-keeper.

As a frontispiece to this issue we reproduce a photograph for which we are indebted to Mr. Percy Ireland, the well-known chemist, who has his establishment in Church Street, Pietermaritzburg. The photo shows Mr. Ireland transferring frames of bees from a six-frame to a larger hive. Mr. Ireland has made a special study of bee-keeping, which he originally went in for in order to obtain a pure article for the manufacture of his "balsam of honey." The usual practice, we believe, is for manufacturers of such balsam to purchase all the honey they require, either from abroad or from various local producers. The result is that the chemist never knows when he has a pure article which has been properly ripened. The ripening process is an important one. When there is a heavy flow of honey, apiarians are in the habit of running the honey before the combs are capped—in other words, before it has properly ripened—in order to have the frames available for further work by the bees. The honey has then to be artificially ripened, a process the thoroughness of which is doubtful. The end aimed at is quantity more than quality; and the result is the imperfect crystallisation of the honey and the presence of water—sure signs of imperfect ripening. Mr. Ireland aims at a pure, natural product, and in order to be sure of having honey of the best quality he keeps his own hives and allows the honey to ripen naturally by, as we have said, waiting until the capping of the combs takes place. Bee-keeping as an adjunct to dispensing is an interesting idea; and the purity of Mr. Ireland's products is sufficient evidence of the profitableness of the practice.

E.C. Fever Legislation in O.R.C.

In the O.R.C. *Government Gazette* of the 20th June was published a Bill which will be introduced into the Legislative Assembly of the Orange River Colony, "to make further provision for preventing the spread of the disease amongst cattle known as East Coast Fever." This Bill will, if passed, empower the Minister of Works, Lands and Mines, to cause the erection of fences along the boundaries of any farm or farms within an infected area. The cost of erecting such a fence is in the first instance to be defrayed by the State: "provided that the owner of any farm so fenced shall be liable for the repayment of the value of the said fence in case he may be benefited or his property improved thereby to the extent of such benefit or improvement and no further" under certain provisions. Among these provisions may be noted that repayment, together with interest at 3 per cent. per annum, can be made by annual instalments not to exceed ten years, and that, where a fence divides the farms of adjoining owners, each owner is liable to the extent of one half of the total amount repayable.

The question of cost of fencing Native reserves is provided for by Section 6 of the Bill, which enacts that, "whenever the Minister shall have incurred any cost in respect of the fencing of a Native reserve, the Board of Management of such reserve, or, if there be no such Board, the coloured male persons resident therein between the ages of sixteen and sixty, shall be deemed the owners of such reserve for the purpose of the repayment of the value of such fence"; and the Board or the Minister, as the case may be, will have the power to levy on such coloured male persons a tax sufficient to meet the amounts of the yearly instalments of the repayments and interest required.

Provision is made in the Bill for the erection, "in respect of any boundary fence falling under the provisions of the Colonial Boundaries Fencing Ordinance, 1907," of a second line of fence at such distance from that boundary fence as may be deemed necessary; and regulations may be made with a view to keeping the strip of land between such fences clear of stock. The cost of any fence erected in this way is to be paid for by Government, who will also be liable to pay compensation to any owner or occupier of a farm whereon such fence has been erected who can prove to the satisfaction of the Minister of Agriculture that he has suffered "direct loss or damage" by reason of the construction of that fence.

Under the Introduction of Diseased Articles Prohibition Ordinance of 1905, the O.R.C. Government has prohibited the introduction of "grass or grass hay or any articles packed in grass grown in the Colony of Natal"

into the Orange River Colony. The penalty for contravening the provisions of the Proclamation which gives effect to this prohibition is a fine not exceeding £50, or imprisonment with hard labour for a period not exceeding six months.

Inspection of Nurseries.

The following regulations, which apply generally to all nurseries as defined in Section 3 of the Plant Diseases Act, No. 45, 1904, have been made by the Governor in Council, in terms of Section 8 of the Act: (1) Every nurseryman, whose premises are registered in terms of Section 9 of the Plants Diseases Act, shall, once within each calendar year upon making written application to the Government Entomologist, be entitled to have these premises inspected free of charge by an inspector appointed under the Act. (2) For a second inspection undertaken at the request of a nurseryman, within a calendar year, a fee of £2, and for a third or subsequent inspection one of £3, will be charged. (3) Whenever called upon to do so, either in the case of a first or any subsequent inspection, the nurseryman will provide transport for the inspector from the nearest railway station.

Indenturing White Boys to Farmers.

CANADA'S JUVENILE IMMIGRANTS.

IN response to representations made by the Natal Agricultural Union, the Government has, through the Agent-General for Natal in London, been making inquiries regarding the possibility of apprenticing white lads from Great Britain to farmers in Natal. A considerable amount of information has been received from the Agent-General, but a study of it does not hold out much hope of any proper system being instituted here.

Sir William Arbuckle interviewed the Assistant Superintendent of Emigration for Canada in Great Britain, and was informed that the bulk of the children sent to Canada from England are despatched by Dr. Barnado's Homes and the Church of England Waifs and Strays Society. On arrival in Canada the children are sent to the various Receiving and Distributing Homes belonging to these institutions; and although the Department of the Interior does not undertake the placing of juveniles in situations, they nevertheless receive numerous applications for pupils from

farmers. The Agency through which the child has been sent is held responsible for its proper care, and stands *in loco parentis* until the child attains the age of 18 years. The children are subjected to a searching examination before leaving England by the Assistant Superintendent of Emigration, and if any show undesirable tendencies they are, of course, rejected. After they are placed on the farms they are subject to Government inspection in the nature of surprise visits with the object of ascertaining whether they are properly treated.

The Agent-General also communicated with the head of Dr. Barnado's Homes and with the Secretary of the Waifs and Strays Society. The Honorary Director of the former (Mr. Wm. Baker) wrote, in the course of a letter to Sir William Arbuckle:—

"The boys and girls we send to Canada go first to our Distributing Homes there, and are from thence passed out to situations. Before any boy or girl is selected for emigration, careful enquiry is made as to his, or her, conduct in the Homes. The child's history before entering the Homes is also referred to. In a word, the greatest care is taken to emigrate only such children as are likely to do well in the country of their adoption. We regard as indispensable, conditions of suitability, good health, and satisfactory character.

"The applications for boys, from farmers, are received by our General Superintendent in Canada, these applications being, as a rule, very much more numerous than the boys available for the situations offered. The process of selection is made by our General Superintendent, who has had large experience, and accepts, or rejects, the offers as may seem advisable. Some boys of 14 years of age are placed out for a certain number of years—two, three, or four, as the case may be—upon the understanding that they shall receive, at the end of the term, a certain fixed sum for their services. Other boys are placed in situations by the year . . .

"We have sent children to Colonies other than Canada, but only in small numbers. We have an extensive organisation there which enables us to meet any difficulty which may arise in connection with any boy or girl whom we emigrate." The Director then goes on to point out, as "very essential if success is to be assured," the necessity for establishing, if an emigration scheme to Natal were decided upon, a home or house of reception at or near Durban, and for providing suitably for the after-care and oversight of any lads placed out in situations. Some such arrangements would, of course, have to be made, and the expense connected therewith would be considerable—both for establishment and maintenance. The depressed state of the Colony's finances at the present, however, renders it almost impossible to undertake any scheme similar to that which is in force in Canada, whilst there is a great probability that the distance of Natal from England would militate somewhat against the success of any such arrangement.

Cedara School of Agriculture.

ANNUAL PRIZE DISTRIBUTION.

THE first annual prize distribution at the School of Agriculture, Cedara, took place on Wednesday afternoon, 24th June, in the presence of His Excellency the Governor, who, with his A.D.C., had ridden up in the morning from Maritzburg for the occasion.

The distribution of prizes and certificates took place at 3 p.m. in the Lecture Hall, when Mr. E. R. Sawyer, Director of Experiment Stations, and Principal of the School of Agriculture, spoke as follows:—

Your Excellency,—It is my privilege on this occasion to read the opening chapter of our history as a school of agriculture, and to heartily thank your Excellency, on behalf of all concerned, for your interest in our early endeavours. The tale is necessarily a short and simple one. A provisional prospectus was issued at the beginning of 1906, announcing that a school—as the central feature of our system of experiment farms—would be opened for the reception of agricultural students on the 19th April of that year. On the arrival of the speaker in October, thirteen applicants had entered into residence, and a curriculum, copies of which have been submitted to you, was organised, coming into effect from January 15th, 1907. By the end of June, 29 students were receiving instruction, and the limit of existing accommodation was reached at the end of the year with 30 names on our books.

Arrangements having been made for the reception of second-year students at our coast farm and irrigation station respectively, additional ten applications were entertained for the following session, bringing the total up to 40, when a regrettable outbreak of enteric fever necessitated the closing of our central school for a period of three months. I am more than glad to report that all our patients early made complete recoveries, and the session re-opened in March, with 23 students in residence. At the present moment we have again 30 names upon our books with six additional applications entertained for the next session.

In all 65 persons availed themselves of the educational facilities offered, of whom 17 took special courses. To date 35 have left to take up farming on their own account or to accept remunerative employment, three having proceeded to the Orange River Colony, two to Southern Rhodesia, and a similar number to British East Africa. During the past two months it has been necessary to inform three applicants for farm managers or assistants that all students, on completion of their course, had secured satisfactory employment.

It is not my wish to make "excuse my prologue and apology too

prompt," but, in justice to the loyalty and co-operation of the fellow-workers on my staff, I would wish to urge that any small success which may have been attained in the different branches of tuition has depended rather upon the men than upon their visible resources or advantages. In common with other branches of the service, we have of late been called upon to make our bricks without straw, and it redounds to their credit that in the earlier absence of a possibility of securing outside assistance, members of my staff have willingly, and without prospect of additional remuneration, devoted their brief leisure to the preparation and delivery of demonstrations and lectures upon subjects falling within the province of their daily work. Nor, to my mind, would such tuition suffer by comparison with the work of professional lecturers. A slight increase in the fee charged, dating from the beginning of the ensuing session, will, however, render possible the provision of two additional resident tutors and a proportionate increase in efficiency.

In connection with similar institutions in other parts of the world, it has frequently been urged that if the farm staff of an experiment station be doing its duty, it has little or no time for anything else, and if the members of a college faculty be as fully occupied as they generally are, they have little or no time that can be devoted to the station work without doing injustice to the College. It has, however, been found possible to conduct many experiments in such a manner as to utilise the intelligent labour of students, to which course I cannot see that any reasonable objection can be raised. Indeed, financial stress has compelled an extension of this system whereby all the skilled labour necessary to the working of our different stations is now carried out by students under supervision of a staff of instructors, with a consequent saving of more than £3,000 per annum in wages.

At the present time an urgent demand exists for a short and relatively complete training by many who have but limited time and still more limited means of equipping themselves for an agricultural career. Men of thirty and thirty-five years of age, fully qualified to pursue other professions and callings, are now turning their attention to the unlimited possibilities awaiting the progressive farmer in South Africa, abandoning earlier provinces where the horizon has been narrowly confined by economic reaction from an artificial and inflated prosperity. Such men are entering our school and demanding special courses. That short courses call for less preparation and equipment is a fallacy which will not be entertained by any who may have had experience of so-called popular lectures. The compulsory elimination of matter valuable in itself, but of less immediate importance to those whose interests are at stake, is a task calling for the exercise of the utmost discretion, while the power of combining thoroughness with precision is one enjoyed by a very limited number of teachers.

Such emergencies and the peculiar features of South African farming lead to a demand for the best obtainable equipment for practical demonstration and manual training. Practical demonstration is the short cut to a given end in tuition, and manual training of diverse character has an enhanced value in a sparsely populated country where farms are situated at a distance from industrial centres and means of communication as yet primitive. It has been the speaker's privilege to work for the past five years on the borders of South African civilisation and beyond, and his experience has lent much colour to our course of training. The same divine discontent with the well-trodden paths which has in the past been the Britisher's inheritance will inevitably drive a larger or smaller number of our students to the man-hungry regions beyond the Zambesi, to Zululand, to British East Africa, and our other possessions awaiting development by, and offering large rewards to, the trained pioneer. In accordance with such considerations, and while never losing sight of the higher object to be served by agricultural education, to wit, the development of intellect in students, practical training plays a large part in our system. We are endeavouring to turn out a man self-confident and self-sufficient, one who can build his house, shoe his horse, repair a broken plough, make his own butter and cheese, raise and graft his own fruit trees, and, in short, stand on his own feet. Division of labour is an ideal with little place in the new countries, and "Jack-of-all-trades" is the man who wins out. The purpose of such training is "education," the "training of the mind so that the hand shall manipulate with accuracy, the eye shall see with accuracy, the mind shall think with accuracy, and all the powers of brain, eye, and hand shall work in unison to increase and enlarge the productive capacity of the earth."

Your Excellency, we would wish to regard our institution as a small but integral factor in a widespread movement embracing the whole of South Africa. The personnel of our students affords a clear index to economic conditions which demand a solution of the momentous problem of local industrial stagnation. This is being generally and wisely sought in the diversion of labour from the arts and crafts, from speculative and unproductive employment, to agriculture. For it has been recognised that agrarian settlement is the only available means by which industrial equilibrium can again be secured. To this end South Africa continues to stand in urgent need of the assistance which a sound and comprehensive system of agricultural education could give. The speaker has too often personally witnessed the disasters which have followed the introduction of penniless and untrained settlers, and is convinced that no useful purpose can be served by a repetition of such experiments. Lack of capital can only be compensated by a thorough technical training for the adopted profession. There is an urgent and growing need for a sound and inexpensive grounding in the theory and practice of scientific farming.

THE GOVERNOR'S SPEECH.

His Excellency then addressed the gathering as follows:—

Students,—Recently, when opening the annual show of the Royal Agricultural Society in Maritzburg, I referred to the Garden Colony not being an agricultural country, only one-thirtieth of its area, according to the latest returns that have been published, being under cultivation. I was told afterwards that this was a result of the poverty of the soil and want of regular water supply, and that the land must always be mainly pastoral. I am doubtful whether this is so. Not every staple requires rich soil and regular water supply for its production. Some years ago people certainly did not foresee that the hilltops of the midland districts would be crowned as they are now crowned with remunerative wattle plantations, and just as this new agricultural industry has sprung up and flourished so should others. Scientific study of the properties of our soil and conditions of our climate, scientific cultivation of the land, and conservation of the water that falls on it will, I believe, gradually lead to a large extension of the area devoted to the growth of economic plants. To secure scientific cultivation is one of the main objects of the College, where I trust that the commercial aspect of agriculture receives also due attention. The agriculturist, to make a financial success of his work, without which he will not be able to live on its fruit, must know something of commerce as well as of science, and I am glad to see that farm bookkeeping forms part of your course, and to assume that this includes instruction in the keeping of accurate accounts of all agricultural operations. Another commercial aspect of agriculture is derived from the obvious fact that it is no good growing things that no one wants to buy. The agriculturist must study the local market and the markets of the world. Though it is not specially mentioned in the curriculum that has been shown to me, I have no doubt lectures are occasionally given on the state of these markets—on the consumption in South Africa and in the world generally of the various staples, of the sources of their supply and of the conditions, general as well as agricultural, which enable different countries to compete in furnishing this supply.

Looking through the syllabus of the school, I have been interested to see the large number of subjects which it includes. I realise that if those of each year's course are to be fully mastered, the time spent by students here will be one of hard work. I am glad of it, as hard work in school gives the power of hard work in after life, and such work is, I am convinced, essential if the agriculture of Natal—and that means Natal itself—is to flourish. The establishment of the school two years ago was a great event in the history of the Colony, greater in its effects than others which made more stir at the time. It seems to have so far well answered its purpose, being thoroughly appreciated on the one hand by parents who have boys to send out into the world, and on the other by owners of pro-

perties who desire to obtain for their management competent and thoroughly trained young men. I wish the school continued success, and I have little doubt, Mr. Sawyer, that under your keen and capable direction it will achieve it.

THE PRIZE LIST.

The following certificates were presented:—Sidney St. Clair Ballenden, Edric Murray Smythe, George McFie, Johannes Ljungguist, Thomas Harvey, Meyrick Bennett, Ernest Ross, Albert Herbert Mingay, Reginald Taylor, Kenneth Stewart, Villiers Walker, Frank A. Fynney, Frank K. Murray, Harold J. Griffin, Edwin Osborn Mapstone, Karl Pfothenhauer.

The following was the prize list:—Elementary agricultural chemistry (1906 and 1907): Thomas Harvey.

Principles of Agriculture: 1 A. H. Mingay; 2, Thomas Harvey.

Principles of live stock husbandry: 1, T. Harvey; 2, A. H. Mingay.

Dairy theory: 1, A. H. Mingay; 2, Karl Pfothenhauer.

Butter making: E. M. Smythe; A. H. Mingay.

If you must keep poultry in bare yards, supply grass or some form of green food daily. Every bit of garden greens not used on the table will be utilised by the fowls.

Cream is simply butter-fat and skim-milk, and the proportion in which they come from the separator determines the test of your cream. Look to these things before finding fault with the creamery.

An exchange says that if you are ashamed to have a visitor watch you milk, and are ashamed to offer him a glass of milk, you had better mend your ways. Don't apologise for a filthy barn or dirty milk—clean up!

The exports from Durban of South African fodder and forage during the first five months of the present year amounted to 2,387,098 lbs., valued at £5,040, as compared with 415,472 lbs. worth £1,098 exported during the same period of last year.

Cape Agricultural Union.

ELEVENTH ANNUAL CONGRESS.

REPORT OF PROCEEDINGS.

ON Monday, the 22nd June, the eleventh annual Congress of the Agricultural Union of the Cape Colony opened in the City Hall, Cape Town, with Mr. C. G. Lee, the President of the Union, in the chair. Amongst those present on the platform at the opening were the Hon. F. S. Malan (Secretary for Agriculture), Dr. T. W. Smartt, M.L.A., Hon. Mr. Michau, M.L.C., Mr J. G. Maasdorp, M.L.A., Mr. W. Duncan Baxter, M.L.A. (Mayor of Cape Town), Mr. H. Liberman (Deputy Mayor), and Mr. T. Theron, M.L.A.

The following delegates from affiliated societies were also present:—Albany.—H. Fitchat, M.L.A., and W. Thomas, M.L.A.

Aliwal North.—W. G. Bellairs, — Smith, S. van Aardit, and J. J. McNally.

Bathurst.—R. W. Estment.

Bayville.—Wm. Jurgens and H. Richards.

Bredasdorp.—J. D. Albertyn.

Britstown.—W. J. S. van der Merwe and Z. Blomerus.

Caledon.—J. S. le-Seuer and P. H. Swart.

Cape Flats.—Geo. Smit and A. L. Waldron.

Cape Stud Breeders' Association.—O. E. G. Evans.

Catcart.—T. A. Stevens.

Craddock.—Hon. P. W. Michau, M.L.C., M. J. du Plessis, M.L.A., and H. C. van Heerden, M.L.A.

Darling.—J. W. J. Versfeld and W. F. Duckitt.

East Griqualand.—C. R. Rennie, M.L.A.

East London.—Col. Crewe, M.L.A., Hon. A. J. Fuller, M.L.C., C. P. Perks. and T. W. Irvine.

Graaff-Reinet.—G. H. Maasdorp, M.L.A., and J. D. Momberg.

Humansdorp.—J. M. Rademeyer, M.L.A., and Henry Swart.

Kingwilliamstown.—Jos. Clarke, T. Whitaker, M.L.A., Col. Warren, M.L.A., and Mr. G. Ginsberg M.L.A.

Koonap Heights.—F. W. Douglass, M.L.A.

Malmesbury and Piquetberg.—W. P. Penberthy and P. G. Nelson.

Middelburg.—G. A. A. Theunissen and W. P. Stahl.

Oudtshoorn.—E. T. L. Edmeades and H. J. le Roux.

Paarl.—I. A. Perold, C.C., and A. de Villiers.

Port Elizabeth.—C. Beard, R. Watson, and J. Woodin.

Queenstown.—A. M. Fairweather and C. P. Hill.

Richmond.—R. P. Botha and B. J. Joubert.

Robertson.—D. J. de Wet, J. C. Neethling, and A. J. Marais.

Stellenbosch.—J. P. Louw and J. T. Starke.

Tulbagh.—E. J. Envraad.

Western Province Agricultural Society.—Col. W. E. Stanford, M.L.A., P. A. Myburgh, R. Starke, W. T. Wilson, and J. C. Faure.

Wodehouse.—O. S. Vermooten, M.L.A., and — Venter, M.L.A.

Worcester.—C. Heattie and G. W. Gie.

Government Representatives.—The Director of Agriculture (Mr. J. Noble Jack), the Chief Veterinary Surgeon (Mr. Borthwick), the Government Entomologist (Mr. Lounsbury), the Agricultural Assistant (Mr. Du Toit), the Horticultural Assistant (Mr. Pillans), the Superintendent of Co-operation (Mr. P. J. Hannon), the editor, *Agricultural Journal* (Mr. F. D. MacDermott), who is also hon. secretary to the Union.

The Congress was formally opened by the Secretary for Agriculture, after which the Mayor extended a welcome to the delegates on behalf of the citizens of Cape Town.

ANNUAL REPORT.

The hon. secretary then read the annual report as follows:—

Gentlemen,—Your executive regrets very much that it is not within its power to congratulate the agricultural and pastoral community of this colony so warmly on the assembling of this Congress as was its pleasurable privilege last year. During the intervening period the bright prospects have become overcast, and the general depression which has hung over this country for so long now threatens the agricultural interests in nearly every branch. Severe drought in some sections of the country and a general fall in most of our markets, both at Home and abroad, have brought about a complete change. Not that the outlook is altogether gloomy, but compared with this time last year, it is considerably dimmed. The political crisis and the prolongation of the General Election contributed somewhat towards curtailing the activities of your executive during the past year, and though a great deal more might have been done, had it not been for these disturbing factors, yet something has been accomplished towards forwarding the aims and objects of this Union.

AGRICULTURAL SHOW GRANTS.

Shortly after last Congress the Hon. the Minister for Agriculture called the executive together to consult as to the allocation of the grants in aid of the agricultural societies, which had to be considerably reduced, owing to the straitened condition of the public finances. After lengthy deliberation and discussion, it was decided to advise the Government to distribute the grant *pro rata* to all societies holding shows on the basis of

the actual prize money paid out. This recommendation was formally submitted to the Minister for Agriculture, and adopted by the Government in allocating the sum voted. At the same meeting a question of some importance was raised in connection with the practice of taking exhibits from show to show in the same season, and thus securing a very large number of prizes for the one animal, or group of animals. It was represented as undesirable, and as tending to the encouragement of a class of professional exhibitors. After some discussion, it was decided to advise the Government that, in the opinion of the executive of this Union, it was desirable that no single exhibit should be allowed to draw money prizes, towards which the Government grant contributes, at more than three separate shows in the one season; but that provision might be made by which any such exhibit competing at any show, after having won at three previous shows during the same season, could be placed in its order of merit, and be awarded such recognition as the society concerned might think fit; this recommendation not to apply to machinery and implements for agricultural purposes. This recommendation was also acted upon by the Government. Your executive regrets very much to learn that, owing to the continued depression, the amount placed on the Estimates for the next series of agricultural shows is still less than that voted last year. The amount voted for the season recently closed was £5,000; that for next season has been reduced to £3,000. This means that the grant for each society will amount to three-fifths of that received last season, if the same number of shows are held. As the allocation of show dates has been the cause of much misunderstanding, the secretary has prepared a plan, by which some workable basis should be arrived at. The plan, with a memo. thereon, has been before the societies, and will be laid before you when the subject comes up for discussion.

JUDGING.

The whole question of judges and judging by points has also been under discussion during the past year, and these subjects fully ventilated among the agricultural societies by circular. The results will be placed before you during this Conference, all the information obtainable being laid on the table. All the subjects dealt with at the last Congress have been submitted to the various authorities, and the replies to the resolutions are printed in the agenda now before you. With reference to protecting the seal or mark of the South African Stud Book your executive finds some difficulty in the way. After full inquiries we find the only really satisfactory method open is by incorporation, and this can only be secured by the Stud Book Association itself. Another subject referred to the executive was the consideration of means by which the better recognition of the authority of the Union could be secured. As negotiations for closer union with other bodies have continued

throughout the whole of the period since last Congress, and as later developments held out some hope of a satisfactory conclusion to that movement, your executive considers that this matter may well stand in abeyance until the larger question is settled.

BARREN STOCK.

As more information was asked for on the subject of barren stock at agricultural shows, inquiries have been made, and it has been ascertained that the same subject has been under consideration by the Western Province Agricultural Society. From evidence obtained by a sub-committee of the society, it appears that the Highland Agricultural Society of Scotland insists that all cows (other than Highland cows) "must either be in milk or in calf; if in milk, birth must have been within nine months of the show; if in calf, birth must be certified within nine months after the show." Heifers must be in calf when exhibited, and premiums are withheld till the birth is certified, which must be within nine months after the show. Yeld mares must produce a foal within twelve months of the first day of the show. Other mares must be shown in classes for gelding or mare. Provision is made for examination in case of death before the progeny is born. Ewes must have reared lambs in the year of the show. Sows must have reared pigs in the year of the show or be in pig. Aged bulls and stallions must have had produce, and along with two-year-old bulls, three-year-old colts, and two shear and aged tups have served within the year of show. The Royal Agricultural Society of England is believed to work under the same rules. To meet possible disqualifications, judges are directed to award "reserve numbers"—that is, to place in order of relative merit more animals than those to which prizes are given, in order that, if any are disqualified, the awards may revert to the reserves. If the reserve numbers also become disqualified, the prizes lapse.

INTER-COLONIAL AGRICULTURAL UNION.

Your Union was very fully represented at the annual Conference of the Inter-Colonial Agricultural Union, held at Pretoria in October last, when some very useful work was done, and the bonds of goodfellowship between the agriculturists of the various States were still further cemented. This Union may take it as a compliment that your president was specially requested to accept nomination for a second year as president of the Inter-Colonial Union. Copies of the minutes of that Conference, printed in English and Dutch, are before you, and others have been distributed to the various societies affiliated to this Union for circulation among the members. Your executive deeply regrets to have to announce the death during the year of one of its members, the late Hon. Wm. Rogers, M.L.C., and tenders to the surviving relatives its condolences. In the deceased gentleman this Union has lost a warm supporter and a consistent

worker in furthering the aims we all have at heart. Another member of the executive, Mr. W. van der Byl, of Stellenbosch, resigned during the year owing to his change of residence. His services will be very much missed, as he was always willing to do all that lay in his power to help the work of this body forward.

THANKS.

This Union is greatly indebted to the never-failing courtesy and assistance of the Agricultural Department, and your executive trusts that this Congress will not fail to place upon record its full appreciation of the valuable advice and assistance continuously rendered by successive Ministers and every officer of the department, who all seem imbued with the desire to assist this body by every reasonable means in their power.

A very full agenda is before you dealing with most of the more important subjects at present troubling the agricultural community, and it is to be hoped that your deliberations will be guided by that spirit of reasonableness and appreciation of the general conditions of the country which has marked all our previous gatherings. As this promises to be the largest and most important Congress this Union has held, it is unnecessary to comment upon the self-evident fact that the scope of our influence is spreading over an ever widening field. Your executive is more than pleased to be able to congratulate this organisation upon this fact, and trusts that when closer union may be accomplished the spirit which has always guided this body may be perpetuated, and even extended, in any new organisation in which we may become merged.

THE PRESIDENT'S ADDRESS.

The President (Mr. C. G. Lee) then delivered the following address:

I have great pleasure in welcoming the delegates to this the eleventh annual Congress of this Union, and in doing so, feel the pleasure to be greatly enhanced by the fact that it is by far the largest and most representative gathering we have ever held. It is probably one of the most influential assemblages of those interested in the agricultural industries of this colony which has ever sat, and I trust that the importance and influence of this Union will continue to increase, in order that the people of this colony may be brought to realise the overwhelming importance of the interest we represent; for now, more than ever it is being every day demonstrated that if the prosperity of the country is to be established upon a sound and lasting basis, it must be through the encouragement and establishment of every form of agricultural industry which is suited to our conditions.

THE TRUE BASIS OF PROSPERITY.

When we assembled last year at Port Elizabeth the immediate agricultural outlook was much brighter than it is to-day. The country is now in the trough of one of those periodic waves of financial depression

which sweep over it from time to time; and it is greatly to be feared it will always be subject to such periods of depression until our agricultural resources are more fully developed and established on an unassailable basis. We have experienced such periods on more than one occasion even during comparatively recent times when the public finances have been just as seriously embarrassed as they are to-day. Fortunately for the general progress of the country, relief has previously been found through mining and mineral developments; but after a time the depressions recur in spite of these factors, which goes to prove that the relief thus experienced cannot be always relied upon to be of more than a temporary character. No one can quarrel with the policy of mineral development, least of all the farmer, for it provides him for the time being with excellent markets, and thus enables him to strengthen his position and add to the general wealth of the community by improving the national asset—the land. But mining alone never made a nation and never will. For mining to be made of the greatest value to any community it should be accompanied by a wise and statesmanlike policy of using at least a portion of the wealth it produces for the purpose of encouraging the more stable industries connected with the cultivation of the soil. Minerals will always receive first attention because of the promise they hold out of an easy road to fortune; but what may suit the individual may be very costly to the nation in the end. It would, for instance, be a questionable policy for any community to pledge its credit for the purpose of building expensive railways solely to serve the interests of mineral development without imposing some reasonable direct tax on the interests served to provide for the repayment of at least a portion of the borrowed capital. The present position accentuates this view of affairs of this country, and I fully believe that the depression we are now passing through will be of the greatest value in guiding policy in the future. At least, I trust it may be so, for the picture conjured up by an opposite state of things is most lamentable. It simply amounts to a contemplation of the time when we shall be burdened with an unbearable national debt mainly incurred for the construction of railways to serve the mineral centres, and the trade of those places either much restricted through natural causes or even entirely disappeared. And that burden would have to be borne entirely by the agricultural and pastoral community: for the land, after all, is the only real asset which any State possesses to pledge for its communal indebtedness.

No one can prophesy what may happen in the immediate future, or where, or when another mineral discovery may turn up to give a fresh spurt to trade, but if such a thing does happen, I, for one, trust that the lessons of the past will be taken into account, and some good fruit may be the outcome. As such a prospect is highly problematical, and as the needs of the moment are most pressing, I take it that we are all agreed as to the unwisdom of sitting still and waiting for something to turn up.

A mining boom may help the country to its feet once more, but that help will be all the more sound and substantial if the agricultural and pastoral industries are more fully developed. And as the industries are always with us, and will have to be counted upon for all time, it is surely asking very little of those interested and the general community as well to do all in their power to see them established on such a basis that they may contribute their full share to the wealth and prosperity of the country. And then, setting aside all thought of mining or other booms, the prosperity of these two great industries will do more to solve the problem of depression than any other factors within reach of our hands.

Looking into the whole position a little more in detail, we are all aware that those who know the country best admit that it is as good as ever for general farming purposes. The conditions of one part differ from those of others, but taking it all round it is safe to assert that the era of true development has scarcely as yet commenced. It is true that some of the natural pasture has deteriorated through over-stocking and other recognised evils. But this is not beyond remedy, and now that the fact is being more generally recognised, and those affected are seriously taking these matters in hand, we may look forward to the time when such land will be again turned to profit.

THE GREAT PROBLEM OF THE COUNTRY

—or rather the greater part of it—is water. It is apparent at a glance that the great need of a large proportion of agricultural South Africa is the study of the best means of conserving water in order to guard against the devastating effects of ever-recurring droughts. In conserving water for irrigation purposes and the utilisation of floods lies the great source of wealth for this country.

There is some nervousness about large irrigation works, where great bodies of water could be impounded for use during the dry seasons. But this nervousness is gradually disappearing, as individuals are succeeding in constructing very large works of their own, which are enabling them to increase their activities a thousand fold. And surely what can be accomplished by individuals should not be beyond the strength of the community. The works now cheerfully undertaken and successfully accomplished in this country by individual effort in the shape of water conservation would have staggered the imagination twenty years ago. And let us think just for one moment what a change would come over the whole face of this country were the favourable sites for such works all fully utilised. It would mean that our land would be dotted over with a series of lakes whose valuable contents would be rendering the soil fertile and the people wealthy, instead of the storm waters rushing away to the sea in their countless millions of gallons annually, and carrying with them so large a proportion of some of the richest soil in the world.

The last few years have shown greater advances in this direction than any previous period in the history of this Colony, and it is largely due to this utilisation of conserved water, diverted flood waters, and water from boreholes that there has been such a marked falling off in the importation of articles capable of being produced here. Simultaneous with this there has also been an increase in the extent of land brought under the plough in those districts where the rainfall is sufficient, so that between them the general agricultural output of the whole Colony has been very considerably increased.

It has to be remembered that such works as those I am speaking of involve the outlay of large sums of money for capital expenditure, and it is into these works that a very large proportion of the money the farmers have been earning during that period has been sunk. Yet in spite of all the individual effort we have only touched the fringe of the great work which remains to be accomplished if we are ever to reap the benefits of water conservation and the utilisation of flood waters. We are only, as it were, in the dawn-time of our ultimate wealth in irrigation. This Colony contains enormous tracts of land which can be cultivated for many years without a thought of fertilisers or manures of any description, if we can only bring water to release their hidden riches. As a matter of fact, I know personally of such lands which have been worked for forty years, and are as fertile to-day as when they were first cropped, and they have never received an ounce of manure during all that period. Not that I have any desire to discourage the manuring and careful nursing of either irrigated lands or pasture: I merely mention this fact to prove that this country has enormous tracts of land second to none in the world for agricultural and pastoral purposes.

THE TRANSVAAL MARKETS.

There is just one other point in this connection to which I should like to call attention. In the construction of irrigation works of all kinds, the strictest economy is an urgent necessity. The high returns for much of the produce of irrigated lands which have ruled for some time past may not be always maintained. The Transvaal has been our best customer in the past, but the increasing agricultural activity in that portion of South Africa and the advancing output there of most of the products which the Cape has supplied show us very distinctly that the time may not be far distant when that community may be largely self-supporting. To what extent the Cape producer can compete with the Transvaal in his own markets is still an open question, but it may be taken for granted that rail carriage will always be a heavy handicap for us. For this reason it would be wise for the agricultural population of this Colony to seriously consider the widening of its markets, either by the encouragement of a larger population here or the study of over-sea markets, to which the surplus could be shipped.

In a few words, I believe that this Colony has little to fear but extravagance and a failure to realise the country's capabilities. Many of our people on the land manage to eke out a living of sorts too easily, and, unfortunately, they do not know it and blame the hardship of their lot. If they could recognise the dignity of labour they would do ever so much better. That is why I feel that the bitter experience of these depressed times, deplorable though they may be in their immediate effect, will contribute towards making better men and women of many of us. Great peoples are not evolved out of luxurious conditions; it is the hard country that, as a rule, produces the best types of the human race.

THE WINE INDUSTRY.

The crisis in the viticultural industry of this Colony calls for something more than passing notice. The wine farmer has a great stake in the country, but he holds a peculiar position. The home of this industry is in the West, and this fact, to some extent, accounts for the misconception which has arisen in a measure as to the extent of the actual difficulties with which he is faced. That these are real and of a threatening nature there can be no question. But it is not easy for those living in the Northern, Eastern and Midland sections, who have no knowledge of the case, to realise their full extent. I believe a feeling is growing that something should be done towards grappling with these difficulties, and that some attempt should be made to effectually settle them and help in some way towards placing this important industry on a surer footing. It is not for me here to go into details, but I would like to ask my brother farmers who produce wine to seriously consider if their undisturbed permanent financial prosperity lies entirely in the direction of supplying light wines for the consumption of the South African natives.

THE FRUIT INDUSTRY.

The fruit-growers have a great future before them, for they have not only the local markets open to them for their fresh and preserved products and jams, but they also have unlimited possibilities in the export trade. So far as I can judge they only seem to need to study three things. The first of these is to grow and market only the most suitable and profitable varieties, and the second to exercise care in selection and packing for the oversea markets. The third is the practice of whole-hearted co-operation in preventing the spread of disease and controlling insect pests. It is not too much to hope that this Congress will help materially in forwarding each of these projects.

EAST COAST FEVER.

The whole Colony, and the cattle farmers in particular, feel the danger threatening from East Coast Fever now raging in Natal, and I trust that anything this Congress may decide upon in connection therewith will tend to assist the authorities to so successfully guard our borders that

this terrible disease may be prevented from crossing into Colonial territory. But the task is no easy one, though we may take some comfort from the success which attended the efforts of the Transvaal in keeping the disease in check, and in even going so far as to gradually suppress it.

This is what the Transvaal has accomplished, and with their experience and that of Natal to guide us, we can surely avoid anything like serious loss if the greatest vigilance is exercised.

ANGORA HAIR.

The fall in the price of mohair is a very serious matter for the whole country, as well as the farmers themselves. It will mean that a very considerable sum of money, running into hundreds of thousands of pounds, is lost to this Colony, as compared with last year. In other words, that large amount is withheld from circulation, for it all comes from overseas. But there need be little alarm for the industry itself. We are quite capable of producing the class of hair that is required, but unfortunately at present there is an over-production of strong hair, and this has caused much of the trouble. The farmer who has bought or hired land on the assumption that mohair would maintain its price of a shilling a pound this year is the one who feels the pinch of the shoe mostly, seeing that he has to accept 8½d or 9d. instead. The sudden drop in fair average ostrich feathers and the slump in the poorest qualities, though a bit of a set back to many, is not altogether without its compensating advantages, if it tends to the breeding of a better class of bird.

WOOL.

Wool has suffered in price, and it is a significant fact that Cape wools have been great sufferers in the world's markets. Had the majority of clips been more carefully got up, and less grease and dirt and more clean wool been the objective of the breeders, the loss to the country would not have been so great. The skin market has suffered in sympathy with the other products, and here again the Cape skin and hide trade suffers because of so much faulty flaying and curing. I mention all these industries separately—and there are others which also suffer in the same way—because when any wave of depression sweeps over the world's markets they feel it much more than they would if only the best possible was grown and offered in the cleanest, best sorted and most attractive manner.

It is in the immeasurably great work of demonstrating how such things can be done and the advantage of doing them that this Union has one of its great fields for most profitable work. It is in this sphere where the farmer and townsman have but one object in view. Agricultural societies, farmers' associations and kindred bodies should be the medium of such practical work as spreading valuable knowledge of this description and helpful advice. They would thus enable the country as a whole to increase its income by receiving more for its products which

have to compete in the markets of the world, and in looking through the agenda for this Congress, I am persuaded that your deliberations will tend in that direction.

CAPE COLONY AND THE OTHER STATES.

There is yet another important phase of your work upon which I should like to say a few words. The close association of this Union with the other Colonies and States of South Africa, and the good fellowship which has arisen through your affiliation with the Inter-Colonial Agricultural Union, has always been a source of strength to this organisation, because thereby its scope for useful and profitable work has been considerably extended. However much we may deplore the financial depression, we can but rejoice at the growing spirit in favour of Closer Union throughout the sub-continent. I hope it is not going too far to say that so far as the farming element of the various States is concerned, we have helped to show the way and spread that spirit. But the work is only now beginning in real earnest, and I feel confident that the Cape Agricultural Union will not in the least relax its efforts to bring about a wider spirit of co-operation and unity among all classes interested in agriculture in the Cape and throughout South Africa. This work can be carried out successfully for the profit of the whole country by none better than by such an organisation as ours, in which all interested in agriculture—the townsman, whose share is to promote its betterment by giving his money and time to an agricultural society; and the farmer struggling with his problems on the land—can meet for the promotion of interests vital to the whole community.

In conclusion, I feel it my duty to express my appreciation of the valuable services of your secretary, whose work has been of the greatest assistance to this Union during the past year.

The business of the agenda paper was then proceeded with.*

THROUGH BOOKINGS.

The following resolution was moved by Mr. Woodin (Port Elizabeth):—"That Congress points out to the Commissioner of Railways, with a view to preventing a misunderstanding on the part of the passengers who avail themselves of railway excursion fares in the O.R.C., Transvaal, and Natal, to visit Cape Colony agricultural shows, the urgent necessity in future to advertise, on the Central South African Railways and Natal administrations especially, the 'through fares' from the various C.S.A.R. and Natal stations to the main agricultural show centres of the Cape Colony."

Mr. Douglass (Koonap) said there was a new Minister of Railways,

* We are indebted to the *Cape Times* for the notes that follow on the proceedings. We have omitted reports of those portions of the proceedings which are not likely to prove of general interest to Natal readers.

and he thought a deputation should wait on him before the Congress finished.

Mr. Woodin said he was prepared to accept Mr. Douglass' rider.

The motion was agreed to.

Mr. Myburgh (Western Province) moved the following resolution bearing on the same subject:—"That this Congress deplores the decision of the Government to withdraw the concession allowing visitors to agricultural shows to travel at half single fare. This Congress would point out that as the Government grant has been considerably diminished, and is, it is understood, likely to be still further reduced, agricultural societies have now to depend upon gate money as their main source of revenue, and if the concession referred to be withdrawn, their revenue will seriously suffer. This Congress would also point out that the educative value of shows will be minimised unless special facilities be afforded visitors from the country districts to attend; and Congress feels sure that owing to the large number of persons who usually availed themselves of the facilities provided in the past, the traffic should pay the Railway Department."

This resolution was also adopted.

SHIPPING FREIGHTS ON LIVE STOCK.

The question of shipping freights on live stock was brought up by the Executive Committee, who presented the following memorandum on the subject:—

"For some time past the stock farmers have been agitating for a reduction in the freight charges on live stock imported from Europe. The subject has been frequently discussed, but very little satisfaction has resulted. Last year the whole case was very fully stated in a letter received through the Port Elizabeth Agricultural Society from Messrs. Wm. Cooper & Nephews, who pointed out how the high rates hamper pastoral development. This matter was brought to the notice of the Hon. the Treasurer of the Colony, in a letter giving full details. The Treasurer, recognising the importance of the subject, made representations to the Union-Castle Co., and forwarded copies of letters to this Union. But nothing further has been heard of the matter. It was also brought before the Inter-Colonial Union."

The Chairman said this was a matter which came before the Union at every sitting, but very little good had come of it; however, it was as well not to lose sight of the matter, and therefore he thought the referring of the subject to the Inter-Colonial Union was advisable.

IMPORTATION OF SEEDS.

Mr. Albertyn (Bredasdorp) moved:—"That all such seeds as are required for the improvement of this Colony be allowed to come in duty free at our ports, and be carried free on all railways."

The resolution was carried.

EXPORT OF OATS AND WOOL.

The question of the extension of the same facilities for the export of oats and wool, as were extended to exporters of maize and fruit, was introduced by the delegate for Caledon (Mr. Le Sueur). The same gentleman also moved the following motion:—"That it is desirable that some further action be taken by the Government to place the wool industry on a more satisfactory basis, and whether same will not be assisted by Government granting export facilities to producers under suitable regulations similar to those granted to exporters of fruit under the Government inspection and brand."

Mr. Noble Jack agreed with the mover of the resolution as to the desirability of Cape Colony exporting its best produce. Speaking unofficially, he pointed out that the Government was acting as middleman in the matter of the export of maize, and he questioned if growers were so incapable of dealing with their own affairs as to ask the Government to perpetuate such a state of affairs. The province of the Government, he took it, was simply to regulate matters, and see that neither the grower nor producer took an unfair advantage the one of the other.

It was ascertained during the discussion that the underlying principle of the motions was that no section of the agricultural community should receive any benefit which could not be extended to all. What was objected to was preferential treatment.

Mr. Fairweather (Queenstown) did not see how, as a matter of equity, the Government could refuse the same railage facilities to oat growers as to maize growers.

It was pointed out by Mr. Noble Jack that the value of the maize exported last year was about £13,000, whereas the consuming value was some £4,000 more. He impressed upon the gathering the inadvisability of being misled by boom prices. The first true step would be to make the country self-supporting, and not export those things which they would eventually have to import.

Mr. Struben moved as an amendment:—"That the Government be urged to grant no facilities for the export of any South African produce for which a profitable use can be found in this country, but should export be assisted, the same facilities should be granted to all produce: and that standardisation be insisted upon."

After some further discussion, the amendment was put to the vote and lost, the original motion being carried.

On the second motion moved by Mr. Le Sueur, in response to a unanimous wish, Mr. McKee, the Government wool specialist, said that many bales of wool were sent to the English market, but unfortunately it was found, on being opened, to contain a quantity of rubbish, although

bearing a national brand. What was required was that the buyers could buy the wool without having to open the bales. It was impossible to expect that the Government Inspector should examine every bale of wool leaving the Colony. It remained with the farmers to produce a uniform article, and if they did so they would realise a proper price for it. It was out of the question to expect the Government to come to their assistance, and he could assure those present that the Government could not help them far.

Mr. P. Ryan (Western Province) explained that the wool brokers in Capetown were only too anxious for a very small return to export the wool for the farmers.

Mr. Van Aardt (Aliwal North) thought it would be advisable to leave the subject over pending the presence of Mr. P. J. Hannon, for this concerned his department.

The motion to allow the matter to stand over was lost.

Mr. Philip Myburgh said this was a most important matter, and he thought Mr. Le Sueur would be well advised in withdrawing his motion.

Mr. Rademeyer (Humansdorp) said that what was really required was support for the lecturers and demonstrators sent round by the Government. By doing so, the people would learn how to pack their wool. It was absolutely outside the question to expect the Government to visit each farm and teach the farmer how to pack his wool.

Mr. Shaw Nicholson (Paarl) was of the opinion that good wool would always find a market, and therefore it behoved every farmer to turn his wool out in the best style possible.

Mr. Le Sueur withdrew his motion.

AGRICULTURAL SHOWS.

Mr. J. Clarke (Kingwilliamstown) moved, on behalf of East London:—"That the number of agricultural shows be curtailed or reduced." He felt that large centres should hold shows on alternate years instead of annually. For instance, Queenstown could alternate with Aliwal North, and Kingwilliamstown with East London. This would give Government a chance of curtailing expenses.

Mr. Rademeyer wished to move Humansdorp's resolution as an amendment:—"That this Congress expresses itself strongly in favour of the holding of local shows as at present, and the contribution of Government grants on the basis of 5-8ths of the prize money actually paid out, and does not consider that the interests of agriculture will be served as well by the substitution of circle shows."

Mr. Edmeades (Port Elizabeth) wished to leave things as they are.

Colonel Stanford spoke in favour of the small district show. He felt there would be sufficient support in each district to keep these shows alive, and spoke of their educative value.

Mr. Shaw Nicholson, on behalf of the Paarl, moved:—"That the number of open shows should be limited." He admitted the value of the district and circle shows, but objected to the great number of open shows, which encouraged what might be called the professional exhibitor.

Mr. Hugo saw some good in the "professional exhibitor," who furnished a good object lesson to local exhibitors, even if he did swamp them.

Mr. Malleson moved:—"That Government assistance to shows be graduated as local, district, and open to South Africa, but that the local shows be fostered."

Mr. Rademeyer spoke again in favour of the district shows, emphasising the difference in local conditions.

Mr. Myburgh did not think that Government should be expected to contribute to district shows, though he considered these to be most important.

Mr. Gilsberg, M.L.A., supported East London's motion.

Mr. Fairweather, of Queenstown, was in favour of graduated grants to the different kinds of show. He did not see the objection to the moving of prize stock from one show to another, since such proved educational to the men of the different localities.

On behalf of East London, Mr. J. Clarke moved that the number of shows be curtailed, and the money so saved be spent in keeping the Civil Servants and police in their posts.

When put to the vote, Humansdorp's motion, amended to read as follows, was passed:—"That this Congress expresses itself strongly in favour of the holding of agricultural shows as at present."

ERADICATION OF SCAB.

Among the several resolutions on the subject of the working of the Scab Act, was the following, brought forward by Mr. Struben:—"That, seeing that very slow progress is being made under the present Act in the work of eradicating scab, this Congress is of opinion that legislation should be passed enabling the Government to clean the Colony block by block, and that in so doing consideration be given to the following:—

"(1) The arrangement of the blocks so as to interfere as little as possible with the marketing of stock and the removal of stock from districts in which drought may at the time prevail.

"(2) The dipping of all stock in each block twice under Government supervision.

"(3) The supply of dip for this purpose by the Government free of charge: and

"(4) The prevention of re-infection of clean blocks."

Mr. Struben considered that the country was too large for the proper administration of the Scab Acts, excellent though they were, and he thought the only means of eradicating scab would be to clean the Colony block by block. It would pay the Government to supply the necessary dip.

Mr. Stevens strongly objected to the Government being asked to provide dip, and moved that the words referring to this matter be deleted from the motion.

Mr. J. Clarke thought that the best means of eradicating scab would be to make the farmers pay 6d. a head on scabby sheep.

Colonel Stanford supported Mr. Struben's block system, the present system remaining in force in those parts of the Colony not under this special treatment.

Mr. Le Roux proposed an amendment making field cornets take the place of scab inspectors, but found no seconder.

At the suggestion of the President, the discussion of this question was allowed to stand over until Mr. Davidson, the Chief Scab Inspector, could be in attendance.

At a later stage Mr. Davidson arrived and the debate was resumed.

Mr. Myburgh said it was useless for them to keep asking the Government for every penny they wanted. Government had no money to give, and he thought farmers should put their hands in their own pockets. (Hear, hear.)

Mr. Struben withdrew that part of his resolution asking for assistance.

At the invitation of the Chairman, Mr. Davidson, Chief Scab Inspector addressed the members, and gave a number of hints as to how to keep sheep clean. He suggested beginning cleaning infected areas, and working down to the coast.

Mr. Struben's motion was carried unanimously.

Middelburg, through Mr. Struben, moved:—

"That the Government be urged to carry into effect as soon as possible a scheme of compulsory simultaneous dipping with only lime and sulphur or caustic soda and sulphur dips."

Mr. Swart was against the use of caustic soda and sulphur dips, and proposed an amendment, which he afterwards withdrew.

Several delegates protested against Government introducing a great variety of dips. Practical experience taught them the best dips, but as the Government recognised 46 dips as curing scab, farmers did not know which was the best.

Mr. Hoole said he had used lime and sulphur for 15 years, and his farm had always been free from scab.

Mr. Stevens had never used lime and sulphur, but proprietary dips, and he could always keep scab from his sheep. It was not so much what dip was used as that the farmer should keep his sheep clean. He moved the previous question, but that was outvoted.

The Chairman invited Mr. Davidson to speak on the subject, and he said that the method of introducing dips in the country was absurdly weak. He explained the method adopted, and proceeded to say that lime

and sulphur had cleaned many districts of scab. (Hear, hear.) It was their duty to clean their sheep from scab, and even if they lost a little on the price of wool for a year or two they would benefit in the end.

The Middelburg recommendation was carried with four dissentients.

LOCUST DESTRUCTION.

Mr. Struben moved, and Mr. Malleson seconded:—"That a special locust destruction tax be levied on all properties in the locust zones, and that the proceeds, along with any amount voted by Parliament from the general revenue be expended by Government on the destruction of locusts directly by the Government servants."

Mr. Noble Jack wished to refer the matter to the delegates to the Inter-Colonial Conference. He felt that, unless they were prepared for united action, union was only in the air.

Mr. Struben withdrew in favour of sending up the subject for discussion at the Inter-Colonial Conference.

IMPORTED STOCK.

Mr. Myburgh moved, seconded by Mr. Rawbone, "That, in view of the fact that certificates of freedom from tuberculosis, sent with cattle imported from abroad into this country, have in several instances proved to be of no value, it shall be obligatory to have each animal so imported subjected to the tuberculin test on landing by the Government Veterinary Surgeon without exception."

After several delegates had spoken,

Mr. Borthwick gave some of his experiences with cattle imported suffering from this disease. The result of this experience had caused him to issue orders that all cattle had to be quarantined for a month after arrival for inspection. This was probably going to put importing back a good deal, and therefore he thought Government should come to the assistance of the owner by not charging for their maintenance in quarantine. The cattle would be kept under lock and key after landing till the examination had been made. Of course this would fall heavily on the private importer, but in the interests of the country it was most urgent that such examination should be made.

After further discussion the motion was carried.

VISIT TO ELSENBERG.

On the morning of the 24th June several of the delegates to the Congress and several Members of Parliament, on the invitation of the Principal and staff of the Elsenberg Agricultural College, paid a visit to that institution. The party left town by special train at 8.30 a.m., returning by two o'clock, after which the business of the Congress was resumed.

UNDESIRABLE SIRES.

Mr. Struben moved "that the Government be urged to introduce legislation for the reduction of the great number of undesirable stallions throughout the Colony," and, further, "that this Congress would suggest the introduction of a system of subsidy on the lines of the King's premium in force in England."

The motion was adopted.

GAME PROTECTION.

TAX ON GREYHOUNDS.

The necessity for the introduction by Government of legislation to place a heavy tax on greyhounds for the purpose of protecting game was advocated by Mr. Bayly (Britstown), who referred to the great harm done to game by bands of natives, accompanied by greyhounds and mongrels, going through the country.

The matter having been debated at considerable length, it was agreed that Government should be urged to introduce legislation to place a heavy special dog tax on greyhounds and bastard greyhounds for the purpose of protecting game, and that this special tax be collected by Government.

REGISTRATION OF FIREARMS.

The protection of game from people possessing guns and using them indiscriminately was advocated by Mr. Albertyn (Bredasdorp), who moved a resolution to the effect that all sporting guns and rifles owned by private individuals should be registered, and an annual licence of not less than 10s. per gun be imposed.

Mr. Douglass said the question of protecting game rested with the farmers themselves, and if they wanted to protect the game they could easily do so.

The motion, after further discussion, was lost.

AGRICULTURAL SOCIETY PROPAGANDA.

The necessity of maintaining more active operations in the interests of agriculture in the periods between the holding of the annual shows, was advocated by Mr. Lee, who moved:—

"This Congress strongly urges upon all agricultural societies the advisability of considering the practicability of maintaining more active operations in the interests of agriculture during the periods between the holding of the annual show, and that the executive during the ensuing year endeavour to assist societies in this object as far as possible."

The idea was strongly supported by Mr. Noble Jack, who said that what was required was information, and the only way to get that was from men who knew it. It was articles on different matters by men who were experts that educated the people.

Mr. Woodin (Port Elizabeth) said his society had already made a step in the direction mentioned. Secretaries of agricultural societies did not come sufficiently into touch with the farmers to know what they wanted, but when they got the information, they would be only too desirous to carry it on.

The motion was unanimously adopted.

CLASSIFICATION OF SHEEP.

A special committee appointed to deal with the classification of sheep, presented the following report:—

“The committee wish to report that they are of strong opinion that the present classification of sheep classes at agricultural shows is detrimental to the best interests of the sheep industry, more especially in that it tends to the crossing of various distinct types of sheep, producing animals of no fixed type at all, but merely a show sheep. The committee recommend that the classification be arranged for future exhibition under three classes, viz., for sheep:—

“1. Australian Tasmanian type.

“2. Rambouillet type.

“3. Vermont type.

“The committee further recommend that all agricultural societies shall be immediately advised of Congress’s resolution on this matter.”

The report was adopted by the Congress.

LOOSELY WORDED MOTIONS.

The faulty wording of the resolutions sent in by societies to the Congress, and thus causing great delay in the work, was referred to by Mr. Jack, who advocated more care being taken, and suggested that the matter be referred to the executive. The necessity for delegates sending in their subscriptions was mentioned by Mr. Brown, who also paid a meed of praise to the hon. secretary for his indefatigable work.

ELECTION OF OFFICERS.

Mr. C. G. Lee was unanimously re-elected President on the motion of Mr. Malleson. As Vice-Presidents, Col. Stanford, M.L.A., and the Hon. P. W. Michau, M.L.C., were elected.

The Executive was elected as follows:—Messrs. F. C. Bayly, O. E. G. Evans, E. M. Warren, T. P. Theron, E. T. Edmeades, R. H. Struben, D. M. Hugo, T. T. Hoole, D. J. Albertyn, R. R. Malleson, A. W. Douglass, R. Watson, Jas. Starke, S. van Aardt, A. P. Everett, D. J. de Wet.

Poultry Keeping in a Simplified Edition for Farmers.

FOOD AND FEEDING.

GIVE an ignorant poultry keeper the best strain of the best breed, house his pullets in the finest erection to be had, let them wander over grass runs and through scratching-sheds, surrounded by patent drinking fountains, grit-boxes and insect exterminators; given all these, he who knows not how to feed his poultry will make a failure of the business. The feeding of hens is the very essence of egg production, and very naturally, too, considering that the egg is formed from what the hen eats and drinks. It is no exaggeration to say that an experienced feeder will get more eggs out of the most mongrel of strains than will an ignoramus from a 200-egg strain.

Thus it becomes evident that whatever part breed, strain and housing play in success with poultry, prudence and economy in feeding will take an even more important place.

In feeding, as in the other details of management, simplicity will produce very excellent results. By simplicity we do not mean carelessness; for a knowledge of the properties of the various grains and meals is very necessary. A few years ago, when such a lot was written about "balanced dietaries" and "nutritive ratios," we rather think we used to work out our chicken's meals to about the sixth decimal place in proteids and albuminoids, allowing for a small percentage on account of the bugs they picked up, and throwing in some extra albuminoids for those chicks particularly active. We found, however, that the egg production and growth stimulated by these calculations were not very prominent, and certainly did not compensate for our exertions.

It will never do, though, to altogether pooh, pooh! the theory of the balanced dietary, or we shall have a shocking waste of food. We can, however, make a quite economical compromise between decimal places and utter recklessness, by learning the approximate values of the various foods, and with this knowledge shall be able to feed something near a perfect ratio.

As simplicity and economy are to be our aims, it will be profitable to base our calculations on any foods particularly cheap in our district. For instance, there are many places where our poultry keeper may be the grower of tons of oats or mealies, and will naturally incline towards feeding a preponderance of these grains. Fed exclusively, however, neither will yield very good results, oats, especially South African, containing far too much husk. Mealies, on the other hand, are too fattening for an entire dietary, at any rate to birds in confinement.

In making calculations for the farmer-fancier, we shall have to select from the small variety of foods which are generally available at the average corn dealer. These will usually comprise oats, mealies, wheat, Kaffir corn, bran, pollard and mealie meal, and with these and some form of meat we can make quite a success of feeding poultry.

Mashes for chickens are still unknown on the majority of farms. Where fowls have a free range they will generally do pretty well on grain alone—even mealies—but for birds in confinement soft food once a day becomes practically a necessity for good egg production, and is, we certainly believe, profitable for hens at liberty also. A mash of bran and pollard, in proportion of 1 to 2 parts, makes an excellent feed; or bran, pollard and mealie meal in equal quantities is almost better. Soft food should be mixed into a crumbly condition—not so wet as to be pasty, nor yet dry enough to be powdery. Whether it is fed morning or evening does not matter as much as the morning-mash theorists imagine. If given in the morning a full meal must not be allowed, or a general slackness in the habits and performances of our egg-producers will make itself apparent. By giving a big warm meal just before the birds go in to roost in winter we settle them comfortably for the night. The early-mash people say that fowls want warming in the morning, and that undigested grain will help them through the night. We ourselves have never found undigested food an aid to nocturnal comfort, and although kind friends have prescribed for our colds by hot potions the last thing at night, we have never expected similar treatment betimes in the morning.

To return to poultry, however, which are not quite the same, after all, as humans in their digestive arrangements, we once took to feeding soft in the evening for the sake of convenience, and later returned to our old love, the morning mash. Since then we have once more reverted to soft food as the last meal, and have stuck to it. We shall not launch out into any eulogy of this method, for the simple reason that we can find very little to choose between the two.

There is one more point about soft food, and that is the way it should be given. Whereas throwing it down on the clean grass may answer very well; it will be seldom that one can find a spot so clean that the mash will not attract some filth and rubbish, which will naturally be swallowed by a hen in a hurry to get as much as she can. A fowl can put down a lot of filth without being the worse, but if haphazard methods are persisted in, a day will surely come when we are called upon to effect a difficult or impossible cure through our shirking a simple prevention. An old sheet of galvanised iron makes a splendid feeding trough, useful for mashes and meat, and easily cleaned. The fowls tread on the food very little; they walk principally on the convex corrugations, while the food lies in the concavities.

Grain, on the other hand, is best scattered over the ground. This

gives exercise, and every bird has an equal chance. If fed in enclosed runs, kick-the dead leaves and litter about as the grain is thrown down, and afford extra employment for the inmates.

As regards the values of the grains, short plump oats stand highest, and, with the above mash, may be fed quite four times a week with advantage, though under these circumstances a little more mealie meal may well be allowed.

Wheat is a most useful food, especially for chicks, but is at present rather prohibitive in price.

Kafir corn is sometimes a cheaper food and a very valuable one. The size of the grains makes it a good exerciser, and we use it almost daily for the midday meal. We do not know its exact composition, but fancy it must analyse something like millet.

Barley is a grain we have altogether discarded. It is fattening without possessing the special virtue that the mealie seems to have, and is husky, but without the redeeming value of the oat. In fact, except as a help towards variety, we see but little use for barley as a poultry food.

We should never be without mealies, in spite of all their detractors. They are, however, low in albuminoids and high in starch, and require some balancing to make their use a success. Therefore, on the days when mealies are fed let bran preponderate in the mash, or feed meat. Mealies are quicker digested when crushed. One can sometimes obtain some very dainty little yellow mealies small enough to feed whole; but avoid "white dents" and other enormous varieties, unless they can be crushed.

Animal food is generally picked up in large quantities by birds at liberty. To those in enclosures a generous allowance must be made. If kitchen scraps or the offal from animals killed on the place are available, much waste gravy and meat will be at our disposal, and these mixed up with the mash will be a great help, and should in many cases altogether settle the problem.

If the supply to be gleaned at home is inadequate, meat must be given in some other form—dried locusts, ant-heap, or manufactured beef scraps or cut bone.

In addition to such seemingly indigestible things as grit, oyster-shell and charcoal, there is only one other very necessary item on our chicken's menu. GREEN FOOD must be liberally supplied to those fowls which have not a free range or grass run. Do not be afraid of giving too much; the only danger in feeding green stuff lies in throwing in long, wiry pieces of grass that will sometimes accumulate in the crop and cause that complaint known as "crop-binding." This, however, is not a frequent occurrence, and is seldom serious when it does come, generally yielding to massage or a small operation.

Poultry will eat nearly any green thing such as cows like, and where lucerne or clover can be obtained, nothing comes up to these.

Respecting the number of meals that should be given per day, most authorities are agreed that for birds at liberty one, or perhaps two, where natural food is scarce, will be sufficient. Where fowls are enclosed a light mid-day snack is a good plan to stimulate exercise, if for no other reason. With young chicks, however, much more frequent attention is required, if soft food is to be fed. Chicks under the charge of a hen which is allowed to roam will, of course, be still less trouble, though in such a case there is always a temptation to feed next to nothing, which is a poor policy. The subject of chick rearing and the dry and wet feeding systems will, however, appear later.

SELECTION AND THE BREEDING PEN.

However bad may be the stock in hand, or however good that purchased, there should be a natural and needful desire to improve it. In the former case the quickest, easiest, and in the end the cheapest means of improvement will be to obtain first-class birds and make a new start. Moreover, however good our stock may be, there is no such thing as perfection on this planet, and poultry are improving in many and various ways at every generation, thanks to the efforts of painstaking and experienced breeders.

Ever since the time when Darwin propounded to mankind his theories, men have begun to see clearly the immense importance of heredity, and how great a part natural selection and the survival of the fittest have played in the formation of the various types of life. Owing, however, to this selection being natural on the part of each generation, and not planned by the agents, it has taken centuries to effect any appreciable alteration in form, colour, or size, and we can only conjecture the ages that must have elapsed to completely evolve a variety.

"The mills of God grind slowly, yet they grind exceedingly small." With these operations of Nature compare the results of the modern breeder. Here we see new varieties created every year. In one breed the standard demands a high-standing bird; in a dozen years the normal show pen is too low for it. It is decided that a certain brown breed is too red. A few generations of artificial selection remove the objectionable shade.

These are cases of breeding by sight, and this method is, of course, primarily an exhibition one, since show birds are judged principally by what they appear to the eye. Although this means of selection does not at first appear feasible to the poultry-keeper who wishes to improve laying qualities, a good deal of the interior virtues of hens are outwardly indicated. Trap-nests are, of course, the only infallible way of determining the exact performance of each individual, but the more primitive methods of "lining" fowls, and telling their characters by their combs, heads, gloss, and habits will seldom lie to us.

"*Lining*," a bird consist of drawing an imaginary median line from the point where the neck joins the shoulder to the thigh. If the greater bulk of the body lies in front of this line, the fowl may be classed as suitable for the table rather than the egg-basket. If, on the other hand, the greater bulk lies behind this line, we may fairly safely put down this bird as a layer. The general purpose fowls will generally be found to balance fairly evenly on each side.

As the greatest consideration with most of us will be eggs, the second of these classes will be the one to aim for. There are, however, a few other visible features in our hens that will still further assist us. A bright, red comb, large without being monstrous, tight, glossy plumage, a neat, small head, set well forward, active habits, early to rise and late to roost, these are all the outward and visible signs of a good layer.

Therefore, since trap-nests are hardly likely to find their way on the farm for a long time yet, we would earnestly urge every poultry-keeper, however busy he may be, to use those and any other more certain methods he may possess of selecting only his best to breed from. That old way of taking any eggs that were laid, making some selection, perhaps, in the shape, size, or colour, with no knowledge of what hens laid them, or which cock fertilized them, gave deterioration an equal chance with improvement on what was, in all probability, a flock of no very brilliant performances.

A plan for improvement by selection is most simple. About half-a-dozen of the hens we have picked out as our best (and these, besides being layers, should be large, well-shaped, absolutely healthy, and as near the standard of our breed as possible) are to be mated with a cockerel from a laying strain of some repute, and although he cannot give personal evidence of being a layer, he should possess the other qualities above enumerated. Although scientific in-breeding may be advantageous and harmless in the hands of an expert, it will profit the beginner and amateur to leave it well alone, and introduce unrelated cockerels every one or two years.

If this pen can be given a house so far away from the flock as to prevent contact, the fact that they are at liberty will add to the chances of a high percentage of fertiles, and will save the expense of erecting a small wire-netting run, which must be done if the free-range scheme is not practicable. These confined birds should be fed well, but not fattened, and should never be stimulated by anything stronger than some form of meat occasionally. Plenty of green food should be allowed, and exercise encouraged. Under these conditions one pen should provide enough eggs to supply quite as many chicks as are desirable while things are being done on a modest scale.

As regards the number of hens that may be allowed to a male bird, from five to ten of a heavy breed, and from seven to fifteen of the lighter varieties is a fair estimate. On a free range fertility seems stronger than

in enclosures, and we may consequently incline towards a still larger number of hens when the birds have their liberty.

Eggs intended for hatching should be collected at least twice a day. Eight hours under a hen that has gone broody on the nest has a tendency towards starting a dangerous amount of life in the germ.

In storing eggs, it is very essential that they be either set on end and turned completely over at least every other day, or be laid on their sides and turned about a quarter of a circle daily. This is to prevent the germ, which naturally floats uppermost, from adhering to the shell. Eggs for hatching (or any eggs, for that matter) should be kept in a cool place.

As regards the best time for hatching, we have seen experiments in rearing chicks practically the whole year round, and have come to the conclusion that early spring is the most profitable time, at any rate in the winter-rain districts. With incubators, the beginning of August, otherwise as soon as broodies can be obtained, is, we believe, the time to start hatching operations. This produces chicks that thrive wonderfully at a time of year when the weather is temperate and invigorating, insect and vegetable life abundant, and fleas, lice, and the like scarce. Such chickens grow quickly and strong, and are laying by the following autumn, at a time when eggs are highest in price. Ours is a winter rain district, and we cannot guarantee this system will prove the correct one for every place in South Africa.

Chick-rearing in very hot weather is not to be recommended. Europeans in India usually send their babies to a cooler climate to be brought up, and excessive heat does not seem conducive to vigorous growth in chickens either. Apart from the question of temperature, our hot season is the time when green grass is scarce, while those creatures that prey upon our birds in such numbers are particularly abundant. Chicks reared at this time come on to lay when eggs are as near a drug in the market as they ever become, and such birds generally get into early moulting complications which take all the profit out of them.

To revert once again to the all-important question of selecting the breeding-pen, see that nothing but absolutely healthy birds are included. This may at first occasionally prohibit a great layer or a fine show bird, but it is only sacrificing the chance of chicks with similarly good points for the probability of progeny with weak constitutions. When once a healthy strain is secured, very few will be the rejections for physical reasons. Such a strain—just like a human body built up on plain food, fresh air, and abundant exercise—will be proof against all the minor ailments, and will stand a fair chance against cholera and such pestilences that sweep ruthlessly away the weaklings. On such a strain extremes of weather, damp and dirt, and bad food and water will show their effects far less severely than on a weaklier flock. We are not recommending breeding hardy chickens for the sake of being enabled to neglect them and

take liberties with impunity—such risks amount to much the same as the healthy fool seeing how close he can run to indigestion or pneumonia. But there do sometimes occur unavoidable occasions when chicken-houses get dirty and damp, or a contagious complaint enters our yards. It is then that the constitutions of our birds tell. There is one subject on which we never write, and that is, the diseases of poultry. Thanks to our strains, the little knowledge we possess on this subject has been almost entirely gleaned from our neighbours or from literature.

One last word of admonition. Whether utility or fancy is to be your speciality, do not let either blind you to the merits of the other. It was not so many years ago that there was a sort of reformation in poultry affairs. There arose a large sect of utility poultry men who—to put it broadly—set up as non-conformists to the show standards, and had nothing but abuse for the fancy. This feeling, however, gradually moderated, and although in England, perhaps, utility and exhibition do not walk as closely hand in hand as in the United States, there is not such a great gulf fixed as there was formerly. We have especially noticed this gradual blending of the two in one of the great English utility poultry journals, in which, five years ago, the fancy was generally mentioned with horror, while at the present date the two old factions are treated as brothers. With all due deference to utility, however, and acknowledging the many sins of the fancier, it might be juster to call the fancy the *father* of utility poultry.

Our farmer or fancier, though, does not thank us for sentimentality in these times. Therefore we would point out that there are other reasons than these for endeavouring to combine as evenly as possible the useful and beautiful in our poultry. A customer requiring layers will not give less on account of these being good specimens of the breed, nor will a fancier object to his purchases being ahead of the average hen in egg production. Thus, by keeping both these lines in sight, we are using a two-stringed bow which is superior to, and much more satisfactory than, keeping two breeds: for we shall be catering for three tastes—the fancier, utilitarian, and also the combination man.

Such a strain is no impossibility, and is, happily, no great rarity in the Colonies of South Africa.

(To be continued.)

During the first five months of this year there was a falling off in our exports of South African mohair as compared with those of the same period of last year. This year we exported £18,134 worth of Angora hair, whilst in 1907 £23,643 worth was exported.

Mills and Milling.

A PAPER READ BEFORE THE NEWCASTLE CHAMBER OF
COMMERCE.

By W. BEARDALL.

HAVING been associated all my life with mills and milling, a few remarks connected with this subject will perhaps serve to enlighten those whose business it is not, but who take an interest in the progress of such an industry. To the lay mind, to be the possessor of a mill is to be the owner of a great profit-producing concern, but as the imagination left to itself can do little, it requires considerable capital, skill and knowledge to thoroughly manipulate. To some it would appear that the mere reduction to powder of grain in one process is sufficient, and that such a process constitutes milling, and that any man able to perform this remarkable feat is a miller. This, I can assure you, is a fallacious notion, and one very easily exploded. Such a man might be styled a miller, but only so figuratively, certainly not practically, nor even theoretically. Knowledge in the art of milling may be gained superficially by observation, but the real art requires much practice and experience, not only in the selection and blending of the various grains and the processes through which they go in order to produce the required manufacture of the milled article, but some special knowledge is required of the intricate machinery which is used in mills, large and small, making specialities, or even dealing with ordinary qualities of their productions.

Milling is conducted on very different lines and principles from that of thirty years ago, when after that time the process of reduction was by means of metal mills working in conjunction with other separating devices. The old method was, as is known to you all, by stones; this was by a form of one reduction, but then the stones had to undergo a special form of dressing to enable them to grind freely, and to deliver the ground product to the required degree of fineness. Millstones are used for many purposes, not alone that of grinding wheat and maize, nor are they all constructed alike, or made out of the same material. Special stones are used for special purposes, and the preparing of the faces and the manner of dressing is entirely different in many cases. This was the special study of the old time-worn miller, who loved his millstones, and which to-day are almost out of use—out of use for grinding the principal grain which is now so greatly used.

It seems strange that this method of milling should have departed from us, considering the length of time it has been in vogue, even in days

long ago by the mere process of putting the grain in between two boulders, flour was produced, then by a more enlightened process of turning the stone round on the top of another with a handle in which the corn was poured through a hole in the top stone, after which larger stones were used, the process being the same, excepting that animal instead of human power was used to turn them round.

Then mechanical devices were used to drive the millstones, wind, water and steam, gas, oil and electricity. At first the methods were very primitive; men were the elevators, carrying the corn on their backs up a ladder, there to feed the mill, the ground product falling into a receptacle below. As time, however, went on, the system of handling grain became more advanced. Millstones were placed on a higher plane and the ground product taken from below, whilst the grain was shot into a bin above the stones, the result being an almost automatic system of feeding, grinding and handling. Wind was very largely used in England before I came to South Africa to provide power for mills having stones, but nowadays the old landmarks are almost all demolished and the old tower is the only remaining monument. These mills had four to six sails on them, which contained what is known as shades to admit of more or less wind pressure as might be desired. These were adjustable by the operator by means of a rope and the sails were turned in the old wooden post mills to the windward by the miller thrusting his neck in between a pair of yoke skeys and pushing the sails round into the wind. This the man had to do even though it might be in the middle of the night, should the wind change. On more modernised wind-mills the sails were conducted into the wind by means of a fantail revolving and by a system of geared wheels conducting the sails round. The motive power is then communicated by the wind shaft to a vertical shaft running down the centre of the mill (tower) and by means of spur and bevel wheels the stones were set in motion. In addition to grinding, a dresser was used which extracted the fine product, known to them as flour or whole wheaten meal, and to us in this country as Boer meal. These mills were built in many curious ways and on curious sites, at different heights with different domes on the top of the towers. Many were built of wood entirely, and on a post strutted from the four sides, and the grain would have to be carried on the back of a man up a ladder into the mill, there to be ground.

As well as wind-mills, numerous water-mills working on the old stone system were to be found. In some places it was more convenient to lock up the mill whilst the grain was ground. In the old days, many years ago, no cleaning devices were used, the grain was simply hopped, fed in the stones automatically, and ground, dirt and everything else that might be in the corn. The selected sites were, of course, for these water-mills by a stream that was conveniently situated with sufficient power to drive the water-wheels, whether they were undershot, overshot or breast

wheels. Some of these wheels were driven from the water coming out of a rock, and the miller's house was built alongside the mill. In many up-to-date mills water is extensively used as a cheap motive power, not only for flour or grist mills, but for other mills such as paper, hosiery, lace, tanning, and a variety of other manufactories, and specially large dams are and have been constructed for the conservation of water for this purpose. I remember seeing one in England that was eight square miles in area, and this supplied water for a flour mill as well as a hosiery manufactory.

As time, however, crept on, more machinery was employed in cleaning and dressing the grain and productions; elevators were introduced for removing the whole and ground product from place to place, and instead of the man carrying up the sack to the top of the mill by main strength and stupidity, hauling devices were introduced worked off the shaft, and by means of a rope or chain the sacks were delivered sufficiently near enough to handle where the real work of milling commenced.

At this point I think it would interest you to hear the history, or part only, of milling in Essex. The portion I am about to read you is from the *Essex Review*. Corn milling flourished from early times in Essex, once a large corn-growing county, with a well-watered and gently undulating surface and an extensive seaboard, that facilitated importation of millstones from the Rhine and the north of France. At first a purely domestic occupation, milling became, as time went on, more and more a commercial undertaking, until in the early years of the nineteenth century every stream and almost every hill-top in the county was planted with wind and water mills. The archaic fashion of bruising grain between two flat stones, pursued by the early Britons, was succeeded by the Roman custom of grinding in a quern, or hand mill, having stones of a peculiarly hard kind procured mainly from Mieder Mendig, near Cologne. Fine specimens of these quern stones, upper and lower, are to be seen in the Museum at Colchester and in private collections in the county. The hand mill remained in use for several centuries.

In feudal England the wind and water mills were important franchises belonging to the lord of the manor, who enjoyed as a rule the sole privilege of multure, or grinding corn, and levied a toll on all persons using his mill. The miller was the most important lay tenant of the manor. The fee for grinding was fixed by the Ordinances for Trade at a quart of wheat for every bushel, which was augmented by another bushel if the corn were fetched to the mill. Every monastery, too, had its own mill, which served usually the double purpose of controlling the sluices of the fish pond and grinding meal.

In mediæval times, at Colchester, and probably elsewhere, the miller was forbidden, on pain of fine, and for a third offence the pillory, to water or change any man's corn, or give worse for better. By the Ordinance the

millers' poultry was limited to three hens and a cock, and all other grain gluttons, such as geese, ducks and hogs, were rigorously banished from his premises. One other interesting item also given prominence is baking. It is this:

In the beginning of the 14th century, as Stowe says ("Survey of London," 1876, p. 56), London was supplied with bread by the bakers of Stratford, who were allowed to bring in penny loaves two ounces heavier than those baked in the City. One of the bakers, John of Stratford, in 1311, for breaking the assize in regard to weight, was drawn on a hurdle through London streets, with a fool's hood on his head and a necklace of light loaves about his neck. The assize of bread was actually framed in the reign of Henry II., but probably existed in some form even earlier. It was strictly enforced, recalcitrant bakers, who refused to bake bread for common use, according to the statute (presumably when the price was too low) were summarily dealt with in the pillory.

I have departed somewhat from the text of my subject in referring to the bakers, but as baking is very closely connected with milling, I could scarcely omit the interesting narrative.

There is, however, one great redeeming feature about the millstone, and that is: it is a self-contained, compact and complete grinding machine, there is no other known machine that will in one operation produce a satisfactory whole wheat meal, but for making flour there are other machines which entirely supersede it. Still, they are units of one whole and necessarily having to work in conjunction with each other, the process devolves itself into one of gradual reduction, the principle employed in making the flour we use to-day.

Frequently persons buying flour will remark, "I want roller flour," and I might as well say that scarcely any flour, if any at all, is made on any other system than by rollers. Several attempts were made to retain the millstones; rolls were used in conjunction. Porcelain rolls were also used extra; other machines were used, but all to no avail. The millstones, on the introduction of rolls, were doomed, and many a miller in those days went under in consequence of continual experimenting in the endeavour to keep his old plant and because of the scarcity of funds to erect the new.

It was about the year 1883 that I was apprenticed to Charles Hopkinson, of Retford, one of the very first in the field to instal mills on the roller system. The period extending from 1880 to 1890 was the most active in the history of the movement.

Large mills were built, smaller ones were converted, as far as possible, into a shape to hold the new machinery, but many were altogether too small. I remember during my apprenticeship of many mill fires, and we used to jocularly remark, "Another new mill to erect; done on purpose." This may or may not have been the case, but generally turned out true.

The system of roller-milling flour was obtained from Hungary and was the outcome of a pilgrimage to the country by British and Irish millers in the year 1877. This then was the turning point in British milling methods. Those who went saw and came back converted, hence the result of what we see, hear of, and read about to-day. The method of milling flour has not altered save for a few minor details, the principle remains, and has stood the test of time for the last twenty years or more, and seems as though it may continue the same for many years to come.

A few alterations may be effected in wind mechanism, but the chilled iron rollers, with their four breaks and six reductions will, I think, be retained. Naturally on the introduction of the roller system, many experiments were carried out, and the miller was led to believe that every new invention was something that would bring in a fortune to the user. Thus, of course, did not work out in actual practice, for it resulted in a vast amount of trouble and even tragedy. Little millers, who had been doing a quiet trade, and making a moderate living, were suddenly confronted with a great danger and impending ruin. To stand still and do nothing meant the loss of their trade and the possible closing of many mills which had been the home of their fathers, and possibly of many generations of their ancestors, or the expenditure of a sum of money which they could not afford, and the result of which was at that time very doubtful, and not only that, the sequel generally ended up with broken-up homes, broken hearts and crushed spirits. I am perhaps indulging in sentimentality a little too much. Still, often pressure is brought to bear in such forcible ways, a fracture or bend generally takes place, as a strain is resultant of the stress. To more fully illustrate such a state of affairs, a wealthy capitalist puts up a new mill to produce fifty bags of flour per hour (and this is not by any means uncommon, for I have personally assisted in the erection of mills to produce sixty bags per hour), not because a new mill is required, as existing mills may have already too little to do, but because his ambition prompts him to outdo his neighbours, or because he is anxious to still further increase the wealth which he can enjoy only for a short lifetime, and which he does not want, quite regardless of the fact that his action means inevitable ruin to a few more struggling little men, who only want to be left alone to get a moderate living. Such, however, is the result of the remarkable alteration in the system of milling which took place about thirty years ago. And so the world rolls on. Men prominent in their time, owing to the change unable to stand the financial strain, went under, and unknown men rose to the top, and they are doubtless amongst the milling fraternity of to-day.

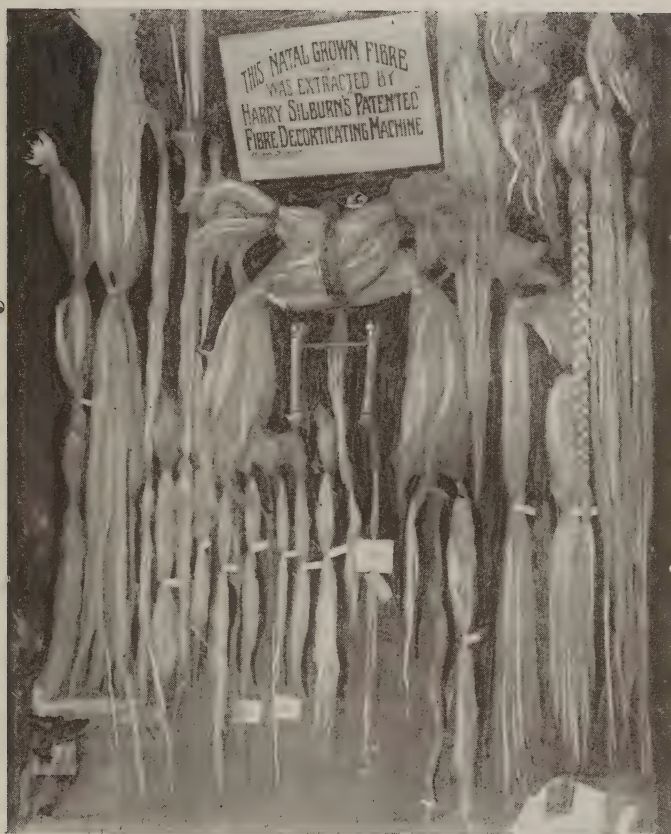
So much for the miller, perhaps I shall find it necessary to portend his future at the close of this article, meanwhile I must proceed with the subject which the text of my paper indicates, and in doing so I wish to avoid as far as possible technicalities, which, to many a lay mind are un-

interesting, and especially so to the uninitiated. But for the purpose of more fully entering into the gist of the subject I am afraid I shall be unable to refrain altogether from doing so. Now it has very frequently been stated that South Africa is not a wheat-growing country, and because of that so-called fact, the opinion has been expressed that flour mills could not necessarily flourish, as sufficient wheat cannot be grown to supply the sparse population that inhabit this extensive country, and so for purposes of illustration, showing that the United Kingdom does not use all her own grown products, I am just going to quote a few statistics. From September 1st, 1907, to February 29th, 1908, the United Kingdom imported: Wheat, 44,137,700 cwt. (10,298,797 qrs.); barley, 12,785,400 cwt.; oats, 5,076,000 cwt.; maize, 23,663,940 cwt. The total yield of wheat in the United Kingdom for the year 1907 was 7,066,399 qrs., so that you will at once notice that, by these statistics 20,000,000 qrs. were imported, more or less, in the year, against 7,000,000 qrs. actually grown in the United Kingdom.

Here are a few of the names of the wheat used in the United Kingdom for making flour, viz.:—North and South Russian, Bahai Plate, Rosa Fe Plate, No. 2 Calcutta, Choice White Kurachee, Red Kurachee, No. 1 Northern Manitoba, Australian, English. I simply name these in order to show that a great variety of different wheats are used, and the business of the miller is to obtain the best selection.

You will observe that the wheats are obtained from Russia, India, Canada, Australia and America, and perhaps from a great many more places that neither you nor I know anything at all about. I came across a small item on the cultivation of wheat in one of my books. It says:—"The cultivation of wheat is believed to be much older than the history of man. Very ancient monuments, much older than the Hebrew Scriptures, show its cultivation already established. The Egyptians and Greeks attributed its origin to mythical personages. The earliest lake-dwellers of Western Switzerland cultivated a small-grained variety of wheat as early as the stone age. The Chinese grew wheat 2700 B.C., and considered it a direct gift from heaven. Wheat is one of the species used in their annual ceremony of sowing five kinds of seeds. Chinese scholars believed it to be a native of their country. The existence of different names for wheat in the most ancient languages confirms the belief in its great antiquity. It has been asserted that wheat has been found growing wild in Asia, but the evidence is not conclusive. The Euphrates Valley is believed by De Candolle to be the principal habitation of the species in pre-historic times. So far as known, wheat was not grown in America before its discovery by Columbus."

I think this should now be quite sufficient about the various wheats and wheat cultivation. I must now go direct to the point in milling. The whole process is one of gradual reduction. The wheat is thoroughly



NATAL-GROWN FIBRES.

Exhibit by Mr. Harry Silburn at the Royal Agricultural Show.

cleaned and graded, extraneous substances foreign to the wheat being thoroughly eliminated; washed, stoned, dried and tempered, blended, weighed and ground. Then it is gradually ground and reduced by further grinding; each and every reduction is treated by specially-built machines for separation of the flour from the semolina, and for the handling of stock as gently as possible.

Every particle of the wheat berry is looked after, and has its proper place in the milling plant, and every particle is reduced to uniformity in size, each and every reduction producing flour. Every particle of flour is taken off the bran, and the bran is flaked to make it broad and marketable, whilst the offals are carefully watched, these being a most marketable commodity in countries where feed for cattle is in great demand. Perhaps you may think that I have not given you sufficient information of this process of gradual reduction, but the whole system is one of great complications and would vary according to conditions. It would vary in the size of the plant—that is, its capacity—and it would vary in proportion to the size of the purse of the miller; it would vary in accordance with the qualities and grades the miller wished to take off. A plant may be erected in a very limited space; on the other hand, it may be contained in a gigantic building. The capacity of the plant may be anything almost from one sack per hour upwards. I do not intend to figure on the cost of roller plants, but I can assure you the cost is not by any means a small one. It is not only the cost of the flour milling plant—there are the silos or wheat storing granaries to be erected. You might call them elevators or you might call them tanks.

You have, however, to equip your cleaning plant. You have all your power transmission to look after, your elevators and other devices, and your steam power or any other power you may select, whether it be gas-producing or electricity; and you have your mill building, which is no mean item.

The subject is almost inexhaustible. I have only touched upon the main points, the details would necessitate many hours of study. I have not dealt with the many inventors, nor have I attempted to describe the mechanism of the various machines and the part they play in the production of flour so far as the newer systems are concerned. This information would, from a business point of view, be supplied to the miller in anticipation of orders by the milling expert, and further, the miller would in most cases to-day know his own requirements.

I have confined this paper to milling wheat, because flour is the greatest commodity of human life: because an attempt is being made to grow wheat more extensively in South Africa, and that, from information I have received, is being carried on fairly successfully: and then, because of this fact, who shall prognosticate the future of the flour milling industry in South Africa? In this country we are yet in a state of infancy

regarding our industries, we are practically devoid of any, hence to a great extent our very sparse population. This great revolution has provided employment for many thousands of men, both as manufacturers of machines and attendants to the making of flour.

Notwithstanding the extensive employment of workpeople in flour mills and in machine shops exclusively manufacturing milling machinery resultant upon this great change from the old to the new, it has brought in its train employment for others engaged in the manufacture of agricultural machinery, for the building of wagons and vehicles of all descriptions, steam, motor and horse lorries. It has caused the opening up of the land and given a fillip to agriculture, in its expansive directions; it has cheapened the cost of foodstuffs and specialised them, as well as making them more palatable. I do not pretend to say that milling has performed all and every miracle, but I do contend that the physical truth, of the animal or human kind demand is to obtain the wherewithal to replenish an empty stomach. To provide food is the first essential feature in our existence. This the agriculturist does by the tilling of the soil and assisting Nature to bring it to a state of perfection, be it plant or animal. The next process is one of manufacture; here then commence the arts of industry—industries of varied description, expanding almost immeasurably in the great cities of Europe and America. Then we have the merchantman dealing in the products of agriculture, manufactures and merchandise. There are also the iron quarries, coal mines, foundries; there are many other trades and professions in which people are all working for one common object, and that is to live. All of us are bread-winners; bread is baked flour or meal, the production of the baker and the miller.

It may interest you to know that 97,168,800 cwt. wheat were imported into the United Kingdom, and to the value of £37,336,830. and of maize the imports were 53,378,950 cwts., the value of which was £14,604,159. I have no statistics before me to say how much this country contributed in maize in that year of 1907, but, according to records, Russia and Roumania respectively exported 6,681,00 cwt. and 10,126,000 cwt.; Argentina, 17,688,000 cwt., and the United States, 14,964,000 cwt. We are now informed by the Agricultural Department of this Colony of Natal that we have 930,000 muids, or in cwts. shall I say 1,860,000 this year.

Amongst the imports of grain, flour and meal into the United Kingdom during 1907 were the following:—Argentina, 21,900,000 cwt.; United States, 20,697,000 cwt.; India, 18,270,000 cwt.; Canada, 12,470,000 cwt.; Russia, 10,900,000 cwt.; Australia, 8,324,000 cwt. Oats to the extent of 10,488,290 cwt.; value, £3,384,577. Barley to the extent of 19,628,620 cwt.; value, £6,565,006. Meal productions in wheat meal, flour, maize meal, oat and other meals were also imported to the extent of

the value of £8,062,254. The full value of the imports into the United Kingdom in grain, flour and meals amounted to the grand total of £70,816,167.

These are figures, and the importance of the oversea market cannot be over-estimated. This, as you will notice, is the United Kingdom. From this distributing centre supplies are also forwarded to other Continental markets. I have no records of South African importations, but when I was on the London market a year ago, corn dealers were surprised to hear that this country intended exporting; on the other hand they quite expected we should be buyers. To make you quite conversant with this subject it is necessary to give you the values of different cereals, and I am referring to the English market. I will quote their weights and prices. For the past three years maize has averaged 22s. 7d. per quarter of 480 lbs.; wheat, 28s. 9d.; barley, 24s. 6d. (400 lbs.); oats, 18s. (312 lbs.); and I would like to mention linseed. Whilst speaking of linseed, I made enquiries some time ago as to whether this was marketable, and the information I obtained I communicated through the *Newcastle Advertiser*. Its worth in the year 1906-7 was 44s. 5d. per 416 lbs., the average for three years would be approximately 41s. This latter-named is a most useful commodity, and from which the linseed oil is extracted and linseed cakes prepared for cattle food, as well as being used for a variety of other purposes, most useful; in fact it keeps a most important industry flourishing.

The increase in imports into the United Kingdom in 1906-7 over imports in 1885-6 amount to:—Wheat, 10,896,000 (480 lbs.); barley, 2,629,000; cats remain approximately the same, and maize, 4,920,000 (480 lbs.). So that the requirements of that particular market are by the figures constantly going upwards.

I do not wish, it was my intention to refrain from anything of a political nature in this paper, but in this item I cannot keep silence, as it vitally affects our present position and particularly so whilst we are labouring in the throes of deep and dangerous depression. That the area of tilled land must be increased if this country is ever to take prominence in the exporting world, that more settlers must and should be placed on the soil and every assistance given him to produce from his holding sufficient cereals for home requirements and a surplus for exportation. It goes beyond doubt that local markets are too small for the vast tracts of land in South Africa, and it is an indisputable fact that industries cannot flourish unless there is an outlet for their manufacture. By an increase in population, as settlers, agricultural labourers, or artisans, the demand for the bye-products of which might be fed to cattle, or returned to the soil, or re-manufactured into other useful commodities. It is no use talking of building elevators for the storage of grain, nor of wasting money on such pet schemes. Better far to catch the hare before you can

cook it, and that is what is wanted. There is time enough for that when the bulk of grain is in evidence, that is when it is certain that a constant supply will be forthcoming. The land cannot be allowed to remain in its barren state; agricultural prosperity must obtain, every nation and almost every industry in the world, has built up its prosperity on agriculture, and any decline in agriculture becomes a menace to national security. It is now past hightime, and time to begin to see the results of our labours, and time for a vigorous display of energy for future developments. Let us hope in a few years we may at least become important grain contributors to the United Kingdom. I have not dealt with mills of any other descriptions connected with the textile trades, paper mills or of any other trade whereby the name of "mills" is used. I have, as you will have noticed, not said anything about other kinds of cereal mills, not even mealie mills. The subject dealing with maize would require more time than you could spare to-night. It is a subject I hope some other member will take up for this Chamber's edification and especially as maize (together with its stalk and leaves) could be made to undergo the processes of various manufacturers and that because of its being a cereal grown to perfection in this Colony.

A noted dairyman says that too much cannot be put on the farming side of dairying. There is an army of cow men who lack an appreciation, first, of really good cows and how to get them; second, of the fertility of the land and how to maintain it while reaping its harvest; third, the kind of crops to grow and how to grow them. The profits of too many dairies are going to feed sellers.

During the first five months of this year our exports oversea of some of the most important S.A. products, as compared with last year, were:— Matches: 1908, £441; 1907, £196. Common soap: 1908, £1,439; 1907, £555. Spirits (all sorts): 1908, £2,613; 1907, £1,143. Sugar: 1908, £1,567; 1907, £31. Tea: 1908, £8,654; 1907, £2,151. Wool, scoured: 1908, £22,273; 1907, £13,106. Wool (in the grease): 1908, £283,760; 1907, £350,907. Wattle bark: 1908, £58,820; 1907, £68,798. Fruit (fresh and dried): 1908, £251; 1907, £379. Hides (ox and cow): 1908, £40,610; 1907, £29,521.

Analyses of Wattle Bark and Trees.

REPORT FROM IMPERIAL INSTITUTE.

THE following results of examinations made of a series of wattle barks from Natal have been received by the Minister of Agriculture from the Director of the Imperial Institute, London. The barks in question were forwarded from the South African Products Exhibition of last year by Mr. T. R. Sim, the late Conservator of Forests.

I.

Description of Sample.—One pound, from trees six years old, grown in poor rocky soil on estate of Harden Heights Wattle Co., Ltd., New Hanover. Small pieces of rather thin fibrous bark; the inner surface dark fawn colour, the outer darker and with silvery grey bloom. A few of the pieces were distinctly red when the inner surface was scraped, but most of the bark was pinkish-fawn when scraped.

Results of Examination (expressed on material as received).—Moisture, 9.46 per cent.; ash, 1.47 per cent.; tannin (by hide powder method), 57.82 per cent.; extractive matter (non-tannin), 9.27 per cent. The bark produces a fawn coloured faintly pink leather with a characteristic "bloom." The leather is of good texture and well filled, but distinctly greyer in colour than that produced by the sample from H. von Bulow's estate.

Commercial Value.—£7 10s. per ton in England.

II.

Description of Sample.—One pound, from trees 12 years old grown on estate of Mr. J. Pope Ellis. The sample consisted of a single large quill of bark about one-third inch thick. The outer surface was dark grey with occasional patches of silver grey bloom; inner surface dull brown; fracture fibrous and reddish in colour.

Results of Examination (expressed on material as received).—Moisture, 10.36 per cent.; ash, 2.57 per cent.; tannin (by hide powder method), 36.78 per cent.; extractive matter (non-tannin), 10.31 per cent. The bark produces a light coloured leather distinctly redder in tint than that furnished by any of the other samples. The leather is of good texture and well filled.

Commercial Value.—£7 10s. per ton in England.

III.

Description of Sample.—One pound, from estate of Town Hill Wattle Company, Hilton Road. Small pieces of bark; outer surface slightly

rough and dark, but little of the greyish bloom is present; inner surface dark greyish brown; fracture light fawn with slight pinkish tinge.

Results of Examination (expressed on material as received).—Moisture, 11.30 per cent.; ash, 2.76 per cent.; tannin (by hide powder method), 35.18 per cent.; extractive matter (non-tannin), 10.36 per cent. The bark produces a fine soft leather of light pinkish fawn colour. The leather is of good texture and well filled, and is very similar in quality to that furnished by the wattle bark from H. von Bulow's estate, but is slightly darker in colour.

Commercial Value.—£7 10s. per ton in England.

IV.

Description of Sample.—One and a half pounds, from estate of H. von Bulow, Wartburg. Pieces of thin bark; the inner surface is dark reddish fawn; the outer reddish-brown with a silvery grey bloom; fracture fibrous and pale fawn in colour.

Results of Examination (expressed on material as received).—Moisture, 11.73 per cent.; ash, 1.56 per cent.; tannin (by hide powder method), 35.23 per cent.; extractive matter (non-tannin), 7.32 per cent. The bark produces a light coloured leather of good texture, well filled, and having the characteristic faint pink tinge of wattle-tanned leather. There is not much to choose between the leathers produced by this collection of samples, but the leather obtained with the bark from this estate is the best of the series in texture and colour.

Commercial Value.—£7 10s. per ton in England.

V.

Description of Sample.—One pound, from trees seven years old grown on estate of Mooi River Wattle Company. A single piece of bark several feet in length and $\frac{1}{4}$ inch thick. The outer surface was dull black with practically no bloom; inner surface dull dark brown; fracture pale fawn colour.

Results of Examination (expressed on material as received).—Moisture, 9.64 per cent.; ash, 2.28 per cent.; tannin (by hide powder method), 39.80 per cent.; extractive matter (non-tannin), 9.93 per cent. This bark produces a soft pliable leather of good texture and well filled, of pleasant greyish fawn colour with scarcely any pink tint.

Commercial Value.—£7 10s. per ton in England.

COMMERCIAL VALUE.

Samples of the five barks have been submitted for commercial valuation to brokers who reported that South African wattle barks containing 35 to 40 per cent. of tannin were selling at £7 10s. per ton in London. This price would, therefore, be obtainable for these barks from Natal.

CONCLUSIONS.

It was stated by Mr. Sim in letters dated the 11th January and the 13th March, 1908, that the information principally required in connection with the examination of these barks is as to the relative tanning values of the barks grown in the different districts of the Colony.

As regards the peculiarities of each of these districts Mr. Sim states that "there are many factors well known to Colonists which exercise considerable influence over the growth of wattle trees, and these differentiate certain districts into the 'Coast belt' (altitude 0 to 3,000 feet), 'Midlands' (altitude 1,000 to 5,000 feet), 'Uplands' (altitude 1,500 to 12,000 feet), and the 'High Veld' of the Eastern Transvaal (4,000 to 6,000 feet). In each of these areas the climatic conditions are peculiar, but with the further variation that the higher localities are subject usually to frequent mists while the lower levels are more hot and dry. The assertion has been made that bark from the 'Coast belt' is of lower value than that from inland and that that from the drier Transvaal has a higher value than either."

The origin of each of the samples now reported on and the amount of tannin found is given in the following table, which for convenience of comparison also contains the results obtained with a sample of bark from the Coastal district, reported on previously (27th December, 1907).

		District.		Percentage of Tannin.	Age of Trees.
21819	— ...	Coastal ...	...	46.4	6 years
21819-1	I.* ...	Midland ...	...	37.8	6 years
21819-3	III. ...	Midland ...	...	35.1	Not given
21819-4	IV. ...	Midland ...	...	35.2	Not given
21819-5	V. ...	Upland ...	...	39.8	7 years
21819-2	II. ...	Eastern Transvaal	...	36.7	12 years

* The Roman numerals in the above table are the figures under which the samples are described in the earlier portion of the report.

In considering these results it should be borne in mind that the samples are not strictly comparable since they are not all from trees of the same age, and it is well known that the age of the tree has a considerable effect on the amount of tannin found in the bark. Further, it is unsafe to generalise from the results of the examination of such a small number of samples, since three of the districts mentioned are represented in this table by one sample each, and it may easily happen that in such cases the samples are not representative of the average product of the district. Subject to these considerable limitations the results recorded in the foregoing table do not support the assertion which Mr. Sim states in his letter of the 31st March has been made, viz.:—That bark

from the Coastal district is poorest in tannin and that from the Eastern Transvaal richest. On the contrary, the single sample from the Coastal district is by far the richest of the series, whilst that from the Eastern Transvaal, in spite of the fact that it is from 12 year old trees, is poorer in tannin than one of the samples from six year old trees from the Midland district. All the samples, however, are of good quality and would be readily marketable in this country.

(Signed) WYNDHAM R. DUNSTAN.

6th June, 1908.

ANALYSES OF WATTLE TREES.

In the May issue of the *Journal* we published the results of analyses, made at the request of the Minister of Agriculture by Mr. Alex. Pardy, the Analyst at the Central Experiment Farm, of wattle trees—bark, leaves, and wood—two and three years of age. Specimens of one-year-old trees had not been received by Mr. Pardy at the time of publication of his report. These have since been received and subjected to analysis, and Mr. Pardy has now reported as follows upon the results of his examination:—

A sample of one-year-old wattle trees recently obtained for the purpose of determining the value of such trees as tannin producers gave the following results:—

		Bark. <i>per cent.</i>	Leaves. <i>per cent.</i>	Wood. <i>per cent.</i>	Complete Tree. <i>per cent.</i>
Moisture ...	...	38.98	35.99	32.80	30.89
Ash ...	...	1.11	2.80	0.93	3.86
Soluble Solids ...	...	23.20	13.46	7.85	11.91
Non-Tannins ...	...	5.49	6.57	3.95	4.96
Tannins ...	...	17.71	6.89	3.90	6.95

These trees were obtained from outside the Central Farm. The results go to show that although the bark is fairly good in tannins, the other portions are comparatively poor, and by including the wood—which forms a considerable proportionate weight of the tree—the percentage of tannin falls very low. The total weight of the tree only runs from 1 to 2 lbs., so that the yield per acre in tannins would be very small. As the tree develops, the woody tissues increase proportionately, and the difficulty of handling and crushing whole trees becomes intensified, the tannins secured from the woody parts being likely to fall short of covering the extra expenses so entailed.

The plan, however, of crushing and soaking, or soaking the smaller branches from matured trees for the purpose of making an extract may be possible with profit.

(Signed) ALEX. PARDY,

14th July, 1908.

Analyst.

Locust Destruction.

REPORT ON 1907-8 CAMPAIGN.

THE following report by Mr. Albert Kelly, Assistant Government Entomologist, upon the locust destruction campaign of 1907-8, is published for general information:—

The season now under review may be looked upon as a very successful one, extremely good work being accomplished having regard to the somewhat limited funds voted by Parliament for the work of locust destruction, namely, £2,000. This sum was found to be inadequate for the service, and, subsequently, an extra £500 was granted from the Contingencies Fund, but it was then too late to take full advantage of the additional sum provided.

Early in October locust report cards were received, notifying that eggs were being deposited over wide areas, more particularly along the coast belt, and it was evident that the Colony was facing a very heavy infestation of hoppers. No time was lost in sending the necessary materials and pumps to the districts in which egg-laying had taken place, in anticipation of the subsequent hatching, and men were selected by the Resident Magistrates and told to hold themselves in readiness to take up the duties of District Locust Officer directly the hoppers made their appearance. When, however, it was pointed out how much money it would be necessary to place at the disposal of the Department to deal efficiently with the invasion, the Government could not sanction the expenditure of the heavy sum involved. It was then decided that the work should be done, for the most part, by the Natives themselves, they being supplied with the necessary materials and pumps, and instructed in the method of procedure by a District Locust Officer; the whole work to be under the joint control of the Resident Magistrates and the Native Affairs Department.

It is necessary to point out here that Government's efforts have, since the commencement of these campaigns against locusts, been directed towards destroying all hoppers hatching on Crown Lands and Native Locations; and in thus relying on the Natives' co-operation in the work the Government was entirely basing its confidence on the interest which the Natives would naturally take in the protection and consequent reaping of their own crops.

When, however, particulars of the scheme were made known, it was the subject of much adverse criticism, and many Magistrates and Native Chiefs did not hesitate to condemn the policy of thus handing deadly poison over to the Natives, the use of which it would be impossible to control. With the Government unable to follow the old policy, and the

general public protesting against the new and only alternative, it appeared that a deadlock was imminent. Nature herself, however, now furnished some solution to the difficulty, for reports came to hand to the effect that the eggs laid in early October had been destroyed by the agency of a parasitic fly. The infestation was considerably reduced by this natural check; so much so, indeed, that it was found possible to revert to and follow the scheme originally drawn up but abandoned by reason of the heavy expense involved in its adoption.

On the 17th of November, hoppers were reported at Mtunzini, and from that date reports of hatching became general. Locust officers were at once appointed, and from then onwards the work in Natal proceeded with the utmost smoothness. I say in Natal, because just at this juncture the campaign in contemplation in Zululand received a further check: I refer to the proclamation of Martial Law and the entry of the Colonial Forces into that territory. The surrender of the Chief Induna taking place upon the 12th of December, a start was made with the work in Zululand a few days later, and proceeded without further interruption, so far north into the territory as the work was undertaken, until the hoppers had acquired wings.

I would here like to express our sense of gratitude to Messrs J. R. Royston and R. Parkin for their very kind assistance in the work. These gentlemen assumed the duties of Chief District Locust Officers in an honorary capacity, and rendered the Department the greatest help in carrying out the work in their respective districts.

The Local Locust Advisory Committees formed at Eshowe and Umzinto are to be especially thanked for the assistance which they rendered, and congratulated on working so much for the success of the campaign in their Divisions. The cordial relations between these two local committees and the Department were uninterrupted throughout the course of the campaign.

I would also like again to refer to the generous assistance extended to us by the Magistrates. To a great extent, the measure of success attained in any district can be gauged by the interest which these officials take in the work, and although I do not wish to individualise—indeed, it is difficult to do so—I would particularly like to thank Messrs. A. J. Maritz, A. Boast, A. R. R. Turnbull, B. Colenbrander, and C. E. Foxon, the Magistrates at Melmoth, Eshowe, Lower Umfolozi, Nkandhla, and Mtunzini respectively, for the sterling work accomplished under their direction. I am also much indebted to Mr. J. B. K. Farrer, the Magistrate at Mapumulo, for the courteous manner in which he has, at all times, assisted this Department. This gentleman took the greatest possible interest in the work, and the results attained in his district go to show that I am justified in my assertion that the success or otherwise of the work depends, to a very considerable extent, upon the enthusiasm shown by the Resident Magistrate.

Much praise is also due to the Natal Police for the regular reporting of locust movements, which information is of the very greatest importance to us in estimating the anticipated degree of infestation, and in making the necessary arrangements to deal efficiently with the hoppers when they make their appearance, arrangements which otherwise it would have been impossible to make with any degree of completeness.

The subjoined table shows the districts in which locust destruction was undertaken by the Government, the number of District Locust Officers engaged, and the number of swarms destroyed:—

District.	Number of D.L.O.'s Engaged.	No. of swarms destroyed.
Lower Umfolozi ...	4	1,782
Hlabisa ...	2	3,975
Ndwandwe ...	1	All hoppers in district destroyed No tally kept.
Eshowe ...	3	3,814
Melmoth ...	1	2,756
Ubombo ...	2	No tally kept.
Nkandhla ...	1	369
Mtunzini ...	3	10,441
Ginginhlovu ...	1	1,200
Krantzkop ...	2	285
Mapumulo ...	3	1,222
Ndwedwe ...	1	110
Upper Umkomanzi ...	1	141
Umlazi ...	5	2,221
Port Shepstone ...	3	1,274
Umvoti River ...	2	427
Lower Umkomaas ...	2 (1 Honorary)	All hoppers destroyed. N tally kept.
St. Faiths ...	3 (1 Honorary)	All hoppers destroyed. No tally kept.
Umqinto ...	3	3,000
	43	33,017

From this it will be seen that 43 District Locust Officers were engaged in the work, and that 35 officers accounted for the destruction of the 33,017 swarms of locusts shown as destroyed. In regard to those districts which

do not show the number of swarms destroyed, I may say that the Ndwandwe Division was but lightly infested; on the other hand, the districts of Lower Umkomaas and St. Faith's were heavily infested, and splendid results attended the work of the locust officers there. I regret to say that no satisfactory returns of any kind were received from Ubombo.

I would point out that the exceptionally large number credited to the Mtunzini Division is accounted for by the fact that the Natives there were instructed in the use of the poison by the District Locust Officers, and did a tremendous amount of work under the direction of the Resident Magistrate. Of course it is understood that eggs are at times deposited in small lots irregularly distributed, but yet again many of the swarms dealt with attained considerable dimensions. A tally of the number of swarms so destroyed by the Natives was kept by cutting a notch in a stick for each swarm dealt with; these records were collected by the District Locust Officers when making their periodical inspections.

The Natives rendered valuable assistance in the Eshowe, Mapumulo, Melmoth, Upper Umkomanzi, and Umzinto Districts also. In other Divisions, however, great difficulty was experienced in enlisting the Natives' sympathy and co-operation in the work, and several reports were received from our officers complaining of the lack of assistance extended to them. In these it was stated that the Natives supplied the necessary labour when the locusts were in the immediate vicinity of their gardens, but were not inclined to so readily volunteer their services when their own crops were not in jeopardy. However, the principle was adopted of first spraying the locusts on the surrounding hills, and it was found that the Natives then rendered all the necessary assistance in order, it may be pointed out, that the locust officer might the sooner deal with those threatening their cultivated lands. In some other instances, delinquents were reported to the Magistrate, and the resulting reprimands were productive of much good.

No shortage in arsenite of soda was experienced this season as in the 1907-8 campaign. An order for 40 tons of the poison was placed in the early part of last year, and this arrived in time to allow of its distribution to the different centres where the hatching of hoppers was anticipated, as reflected in the locust report cards received at the office.

Unfortunately, such a happy state of affairs did not exist in the previous year, the Department being unable to arrange for the supplies being imported until the season was well advanced, owing to the necessary funds for the service not having been allocated early enough.

In the 1906-7 season, the Government, whilst holding a sufficient quantity for its own requirements, was unable to supply the farmers' demand for the poison, and this led to some little comment at the time. Now, whilst regretting the Department's inability to supply the arsenite, I must, in fairness to ourselves, point out that the Government had not

been asked to meet the demands of the public for this chemical, and it was undoubtedly a matter for the local trade's attention. On enquiry, I learnt that their stocks had been depleted in supplying the neighbouring Colonies, whose locust campaign starts much earlier than ours, and also that a considerable quantity had been sold as a basis for the preparation of cattle dip, in connection with the control of East Coast Fever. For lack of time, they had been unable to replenish their stocks to meet the demands of *their own Colony* for locust destruction purposes.

On circularising the other South African Colonies, I find that, together with our own requisition, close on 200 tons of arsenite of soda, representing about £8,000 in value, were imported from Europe for the 1907-8 campaign, and with the German South West African and the Portuguese authorities also taking the work of locust destruction in hand, it seems reasonable to suppose that these figures will increase in future years. Further, a considerable quantity is purchased by private landholders. I mention this to indicate that there is a demand for arsenic in South Africa which would represent a small local industry, if such were obtainable in the country. It is often said that this chemical is of frequent occurrence in Natal, and upon this point, the following information, kindly supplied me by Mr. Audas, the Deputy Commissioner of Mines, will, I am sure, be read with much interest:—

“Although deposits of arsenical pyrites (Fe_2As) or arsenical iron pyrites ($\text{Fe}_2\text{S FeAs}_2$) appear widely distributed throughout the Colony, it is very doubtful if the production of arsenic alone could be produced at anything like the price of the imported article.

“The white arsenic of commerce (arsenious)— As_2O_3 —though sometimes occurring native as arsenolite in the form of botryoidal and stalactitic crusts of white or yellow colour, is, as a rule, obtained as a bye-product in the metallurgical operations of extracting certain cobalt and nickel from their ores. Arsenides and sulpharsenides, on roasting, give up their arsenic in the form of fumes which are condensed in chambers prepared for the purpose.

“It appears to me that unless discoveries of cobalt, antimony, or nickeliferous ores are made, the manufacture of arsenic is not very possible, or rather, probable.”

After the lead taken by Natal in this work of locust destruction, it is but fitting that she should reap what contingent benefits there may be in connection therewith, and I trust that this matter will receive due consideration.

That she is already receiving some pecuniary benefit from the work carried out in the other South African Colonies is shown in the communications of their officials, sent in reply to a request from this office for a return of the quantity of sugar purchased by their Governments in the last campaign. By these it would appear that £2,701 worth of our sugar

was purchased, whilst Natal supported her own industry to the extent of £243.

Earlier in this report mention was made of the prevalence of parasites, and the good results traceable to their agency. It was the larva of a Tachinid fly that destroyed the earlier laying of eggs at Darnall, Stanger, and other places, and each succeeding year this insect proves itself a valuable ally. The larva of a Mylabris beetle, though not so prevalent as last season, has been reported, and numerous communications have been received vouching for the insatiable appetite of the black and white locust bird for the hoppers.

Then there is a small red mite, which may be found on the adult insects, also a Gordius worm, whilst evidence in support of the hopper-eating propensities of both snakes and frogs has been volunteered by two gentlemen. I mention these latter instances only as points of possible interest, for but little economic importance can be attached to them.

I find that there are still quite a number of people who steadfastly believe in the efficiency of the artificially prepared and distributed locust fungus, despite the fact that it has been pronounced as worthless by the specialists of all the countries to whom it has been sent. For some years past, this office has taken up the position that, providing climatic conditions were suitable to the development of the fungus, the disease would do its work unassisted by any human agency, and the report of Mr. Pole-Evans, the Mycologist attached to the Transvaal Department of Agriculture, but serves to support our contention. In order that this vexed question—for I find that many are not inclined to accept any expressed opinion which may be contrary to their own pre-conceived ideas—as to the value of the artificially prepared culture and distribution of the fungus, may be definitely settled, I take the opportunity of setting out the conclusions arrived at by Mr. Evans, after careful consideration had been given to the matter, and numerous experiments had been conducted in support of his views.

In these it was conclusively proved that the fungus which had been artificially prepared and distributed in tubes was a *Mucor* (*Mucor exitosus*); that it was purely saprophytic in its nature, living on the bodies of dead locusts, and that it never assumed a parasitic habit. On the other hand, it was shown that the fungus which causes the characteristic disease of the locust furnished the very antithesis of the distributed agent, inasmuch that it was found impossible to induce it to grow upon any of the usual artificial media or inanimate matter, and its cultivation was only secured by the aid of living insects. Further, the fungus belonged to quite another genus, being placed as an *Empusa*.

In concluding his article, Mr. Evans says:—

“All the data which I have to hand leads me to conclude that *Empusa grylli* is the main cause of the mortality that occurs from time to

time in South Africa among locusts, when a fungus agent is at work. This fungus is entirely dependent for its growth on the living tissues of its host, therefore I fail to see how it can be put to any economic use.

"I have no intention of concealing the fact that I am of opinion that the whole question of the value of the *South African Locust Fungus* has been greatly over-estimated, and has resulted in nothing more than a fiasco.

"Nature controls the locust pest, to a certain extent, through the agency of this parasite, but this is not sufficient. Man must resort to some other means than that of leaving it to Nature, for so far little success has attended his efforts to simulate Nature's methods."

It sometimes happens that a swarm, after having been artificially infected with the *Mucor*, develops the disease, and the operator is jubilant at what he thinks is his successful inoculation. I am convinced that where such an incident occurs, the swarm was affected by the disease—that caused by the *Empusa*—before his interference.

CENTRAL LOCUST BUREAU.

Early in the year of 1906, His Excellency the High Commissioner for South Africa called for a conference of delegates from the various South African Colonies, and, as a result of this meeting, the Central South African Locust Bureau was established. The work of this institution consists, primarily, in collecting all available information relative to the movements of locusts in the sub-continent through the year, the issue of telegraphic warnings of impending invasions to the Colonies threatened, and the preparation of monthly and special charts in which the locust situation is clearly depicted.

The Committee of Control recently submitted a report to the various South African Governments, containing recommendations in connection with the use of the arsenical solution for the destruction of locusts, based upon the results of its successful use over such widely different topographical conditions as those presented by the abrupt and hilly nature of Natal, and the plains of the Transvaal and Orange River Colony.

In preparing the poison, white arsenic, washing soda, and treacle, as a sweetening agent, were originally used by the planters of Natal. In the course of the Government's operations, it was found impossible to transport treacle advantageously over long distances, and treacle sugar and mill-sweepings was substituted in its stead. Subsequently, on the suggestion of Mr. C. P. Lounsbury, the Government Entomologist of Cape Colony, a trial was made with arsenite of soda in Natal, and this proved of so great advantage over the arsenic and soda solution that it has since been adopted by all the Governments participating in the work. In view of the advisability of a more general adoption of poisoning than even now exists, the Committee of the Bureau has made the following

suggestions in order that recognised formulæ for the preparation and use of such poisons may be agreed upon.

The formulæ for arsenical solution for the destruction of hoppers are given—the white arsenic solution, and that having the arsenite of soda as its basis.

White Arsenic Solution.

White Arsenic (Arsenious Oxide)	1 lb.
Soda (Caustic or Washing)	8 ozs.
Sugar or Treacle	2—4 lbs.
Water	17 galls.

Boil the arsenic of soda together with 2—3 gallons of water until the arsenic is quite dissolved. While this is being done, dissolve the sugar in another vessel. Mix the whole together with the balance of the water, and the solution is ready for use.

Arsenite of Soda Solution.

Arsenite of Soda	1 lb.
Sugar of Treacle	2—4 lbs.
Water	16 galls.

Mix the arsenite of soda and the sweetening agent in sufficient cold water to thoroughly dissolve them; when this is accomplished, add the balance of the water and the solution is ready.

The arsenite of soda will dissolve more readily in hot water than cold, but it is only necessary to do this when the saving of time is the main object in view. In preparing large quantities of solution it is best to place the arsenite of soda in water, and allow it to remain there overnight; about one gallon of water should be allowed for each pound of arsenite. By tying the poison in a sack, and suspending it in the water from a pole placed across the top of a barrel, the dissolving process is much facilitated.

Use of the Solution.

(a) Whichever solution is adopted, should be sprayed on the grass, bushes, etc., which the locusts are eating, or are just about to eat. When they are small and are more or less stationary—say in the early morning or evening—the solution should be sprayed among them or in a circle around them, but when large and on the move, a strip of grass along their line of advance should be sprayed. In the Orange River Colony, where crops were threatened by the advance of huge swarms of hoppers, the system of soaking large quantities of forage in the solution was attended with much success. This method was, however, generally adopted where the land surrounding the crops was bare of grass.

(b) The solution is best applied with a spray pump, and for the purpose, the Deming's "Success" Bucket Pump, fitted with Bordeaux

nozzle, has been found the most suitable. These spray pumps require a certain amount of care in handling, and much damage was done to the hose by reason of the Native assistants turning off the nozzle whilst the air reservoir was full. The result was that the hose became loosened at the point of attachment to the pump, and, in many cases, burst by the great pressure of the liquid contained in it.

(c) A good time to spray is when the locusts are camping for the night or in the early morning, before they spread out and become active in the heat of the sun.

Various Strengths of the Solution.

(a) In preparing the solution, an ordinary paraffin tin may be used as a 4-gallon measure for the water, the ordinary 4lb. golden syrup tin makes a convenient measure for treacle, and a bully beef tin or a large cup will hold 1lb. of arsenite of soda. Large quantities, however, should be weighed where the weight contained in the packages is unknown.

(b) Whilst the locusts are young, *i.e.*, in the first two weeks of their growth, the solution should be prepared as follows:—

Arsenite of Soda	1 lb.
Sugar	2—4 lbs.
Water	16 galls.

(c) When the locusts are half grown, *i.e.*, from two to five weeks old, the solution should be strengthened at the rate of:—

Arsenite of Soda	1 lb.
Sugar	2—4 lbs.
Water	12 galls.

Where the hoppers are very large, and their wing-pads well defined, a solution of 1lb. of arsenite of soda to 8 gallons of water may be used, but the employment of this concentrated solution is not recommended. I find that there is a great inclination to use the solution at this and greater strengths than is here recommended, many wishing to see the result of their work well in evidence before leaving the place of their labours. In other words, they want to see the locusts die immediately. This is to be condemned, and for several reasons. By using the solution at a greater strength than is necessary, the grass is burnt to such an extent that some time must elapse before it throws out fresh foliage; there is the increased danger should stock, by any chance, get on to a sprayed area; and there is the question of an increased outlay. There is much in "making a thorough job of it," but I do not think that the satisfaction of seeing the enemy die before one's eyes quite compensates for the disadvantages to which I have referred.

That the reports collected by the various South African Colonies and sent to the Bureau will result in the tabulation and distribution of

much valuable knowledge in connection with the life history and movements of the insect in the sub-continent cannot be doubted, and much good should result from its work.

It gives me pleasure to be able to state that the 1907-8 campaign was attended with the best results that have ever attended our efforts against the locust scourge, and it is particularly gratifying to read the many letters that have been received, testifying to the excellent work accomplished by the locust officers. The Department was particularly fortunate in the filling of these positions this year, the gentlemen holding the posts being, for the most part, men acquainted with and having interests in the districts over which they were placed, and who took great pains in the successful working of the campaign as far as they, individually, were concerned. The selection of suitable men was, in many cases, left to the discretion of the Resident Magistrates, and it must have been gratifying to these officials to find that their confidence had been so well placed.

In concluding this report, I would like to emphasize the fact that the knowledge that one had a sufficient sum allocated to the service would be of the greatest help, as one could then ascertain just to what extent and in what districts the work could be carried out to the best advantage, and so allow of the necessary arrangements and district allocations—these being based upon the anticipated degree of infestation, as shown in the locust report cards received—being made well in advance of the locust hatching.

Natal cannot well shelve this scheme of locust destruction, seeing that she herself first called for concerted action by the South African Colonies to deal with the scourge; and, that these representations have not been disregarded, is shown by the fact that all of these States have now recognised provision on their Estimates for such a service. In saying South African, I include the German and Portuguese Colonies.

Further, it has been conclusively demonstrated that, no matter what the amount expended on the destruction of locusts, it but represents four to five per cent. of the total value of the crops saved; I venture to think that but few farmers would hesitate to insure their crops against this pest, were it possible to do so on the payment of so small a premium.

ALBERT KELLY, F.E.S.,
Assistant Entomologist.

Approved :

CLAUDE FULLER,
Government Entomologist.

The Forests of Europe.

HOW THEY ARE CONSERVED.

I.

FOREST conservation is one of the great problems which is receiving the close attention and study of a considerable number of scientific workers in South Africa, and it is a problem the importance of which is fairly generally recognised in this country of immense tracts of rolling veld, of boulder-strewn hills, of short rushing streams, and of large areas of karroo land. Our forests cover a very small percentage of the total area of the country; no very considerable revenue is derived from their exploitation, but their very smallness, the importance of forest lands to a country, and the possibilities which large forests that are scientifically conserved and exploited offer, serve to impress upon the thinking sections of the public the importance of the whole question of afforestation.

In view of these facts, it is instructive to turn occasionally to other countries and to observe what has been and is being done there in regard to forestry matters. In our April issue we published an article on forestry in America in which an account was given of the National Forests of the United States and the steps which the National Government are taking to ensure the adequate conservancy of the forests of the country. Extending our observation to Europe, we are now enabled, through the instrumentality of a very instructive little bulletin lately issued by the Forest Service of the United States Department of Agriculture, to place before our readers a brief account of what forestry has done in other countries. From this account two things will be observed to stand out with striking clearness. One is that those countries which have gone farthest in the practice of forestry are the ones which to-day are the most prosperous, which have the least proportion of waste land, and which have the most promising futures. The other is that those countries which spend most upon their forests receive from them the greatest net returns.

The countries of Europe and Asia, taken together, have passed through all the stages of forest history and applied all the known principles of forestry. They are rich in forest experience. The lessons of forestry were brought home to them by hard knocks. Their forest systems were built up gradually as the result of hardship. They did not first spin fine theories and then apply those theories by main force. On the contrary, they began by facing disagreeable facts. Every step of the way toward wise forest use, the world over, has been made at the sharp spur of want, suffering, or loss. As a result, the science of forestry is one of the most prac-

tical and most directly useful of all the sciences. It is a serious work, undertaken as a measure of relief, and contained as a safeguard against future calamity.

Roughly, those countries which to-day manage their forests on sound principles have passed through four stages of forest experience. At first the forests were so abundant as to be in the way, and so they were either neglected or destroyed. Next, as settlements grew and the borders of the forest receded farther and farther from the places where wood was needed and used, the question of local wood supplies had to be faced, and the forest was spared or even protected. Third, the increasing need of wood, together with better knowledge of the forest and its growth, led to the recognition of the forest as a crop, like agricultural crops, which must be harvested and which should therefore be made to grow again. In this stage silviculture, or the management of the forest so as to encourage its continued best growth, was born. Finally, as natural and industrial progress led to measures for the general welfare, including a wiser and less wasteful use of natural resources, the forest was safeguarded and controlled so as to yield a constant maximum product year after year, and from one generation to another. Systematic forestry, therefore, applied by the nation for the benefit of the people and practised increasingly by far-sighted private citizens, comes when the last lesson in the school of forest experience is mastered.

GERMANY.

Commencing our survey with the German Empire, we find that that country has nearly 35,000,000 acres of forest, of which 31.9 per cent. belongs to the State, 1.8 per cent. to the Crown, 16.1 per cent. to communities, 46.5 per cent. to private persons, 1.6 per cent. to corporations, and the remainder to institutions and associations. There is a little over three-fifths of an acre of forest for each citizen, and though 53 cubic feet of wood to the acre is produced in a year, wood imports have increasingly exceeded wood exports for over forty years, and 300,000,000 cubic feet, valued at £16,000,000, or over one-sixth of the home consumption, is now imported each year.

Like other advanced European countries, Germany felt the pinch of wood shortage a hundred and forty years ago, and though this shortage was relieved by the coming of the railways, which opened up new forests, and by the use of coal, which substituted a new fuel for wood, the warning was heeded, and systematic State forestry was begun. After all, the scare was not a false one, for even to-day Germany is not independent as regards wood, since she has to import one-sixth of all she uses.

In addition to the wood-supply question, Germany was forced to undertake forestry by the need of protecting agriculture and stream flow. The troubles which France was having with her mountain torrents opened the eyes of the Germans to the dangers from floods in their own land.

As a result the maintenance of protective forests was provided for by Bavaria in 1852, by Prussia in 1875, and by Wurttemberg in 1879.

Each State of the German Federation administers its own forests. All of the States practise forestry with success. The results obtained by Prussia and Saxony are particularly interesting, for they show how forests may be kept constantly improving under a system of management which yields a handsome profit.

The Prussian forests cover nearly 7,000,000 acres. When forestry was begun a great part of them had been injured by mismanagement, and the Prussian foresters had to solve the problem of improving the run-down forests out of the returns from those which were still in good condition. They solved it with striking success. Immense improvement has already taken place and is steadily going on.

The method of management adopted calls for a sustained yield—that is, no more wood is cut than the forest produces. Under this management the growth of the forest, and consequently the amount cut, has risen sharply. In 1830 the yield was 20 cubic feet per acre; in 1865, 24 cubic feet; in 1890, 52 cubic feet; and 1904, 65 cubic feet. In other words, Prussian forest management has multiplied the rate of production three-fold in seventy-five years. And the quality of the product has improved with the quantity. Between 1830 and 1904 the percentage of saw timber rose from 19 per cent. to 54 per cent.

The financial returns of Prussia make an even better showing. Net returns per acre in 1850 were 28 cents. In 1865 they were 72 cents; in 1900, 1.58 dollars; and in 1904, 2.50 dollars. They are now nearly ten times what they were sixty years ago, and they are increasing more rapidly than ever.

These results have been obtained in Prussia along with almost ideal technical success. When what is wanted is a sustained yield from the forest year by year in the long run, it is clearly necessary to have always a certain number of trees ready to be cut; there must be a proper proportion of trees of all ages. This percentage has been secured and maintained with almost mathematical accuracy. In Saxony, which has about 430,000 acres of State forests, the increase of cut under forest management, which always means also a corresponding increase in wood product, has been nearly as marked as in Prussia. The yield rose 55 per cent. between 1820 and 1904, and is now 93 cubic feet per acre—greater than that of the Prussian forests. Since the chief wood is spruce, which yields more saw timber than the average of trees making up the Prussian forests, the increase in the percentage of saw timber in Saxony naturally exceeds the increase in Prussia. It increased from 26 per cent. in 1830 to 66 per cent. in 1904. The net yearly revenue is 5.30 dollars per acre. The yearly expense is 3 dollars per acre.

Other German States, smaller, and with better kinds of timber and

better market facilities, secure even higher returns. The forests of Wurttemberg yield a net annual revenue of nearly 6 dollars per acre, and those of several smaller administrations do even better.

What, then, has forestry done in Germany? Starting with forests which were in bad shape, it raised the average yield of wood per acre from 20 cubic feet in 1830 to 65 cubic feet in 1904. During the same period of time it trebled the proportion of saw timber got from the average cut, which means, in other words, that through the practice of forestry the timber lands of Germany are of three times better quality to-day than when no system was used. And in fifty-four years it increased the money returns from an average acre of forest sevenfold.

Yet to-day the forests are in better condition than ever before, and under the present system of management it is possible for the German foresters to say with absolute certainty that the high yield and large returns which the forests now give will be continued indefinitely into the future.

FRANCE.

France has not quite 18 per cent. of forests—three-fourths of an acre per capita. This is enough to produce only one-third of the home demand. The country imports annually 30,000,000 dollars' worth of wood, and pays 6,000,000 dollars duty and 10,000,000 dollars freight for it. This wood comes from Russia, Sweden, Norway, Austria-Hungary, Germany, and America. Of the 23,500,000 acres of French forests the State owns 2,707,000, and the departments and communes 3,472,000. Since 1827, when the forest code was passed, the State and communal forests have been under management. The State forests yield a clear profit of 4,737,250 dollars a year, or 1.75 per acre; 0.95 dollars is spent for the management of each acre every year.

The best managed State forests yield about 40 cubic feet per acre a year, which is low compared with the yield of some other European forests, such as those of Prussia, Saxony, or Wurttemberg.

The great achievement of France in forestry has been the establishment of protective forests where much destruction has been caused by floods and winds. From various causes large areas were cleared of forests toward the close of the eighteenth century, and only when it was too late was it realised that these lands were not fit for agriculture and should have been left in forest. To repair the mistake, a movement to re-forest began in the nineteenth century. It was an exceedingly expensive mistake. Down to the present time, encouraged by wise laws, the State, the communes, and private land-owners have restored to forest over 2,500,000 acres, and so saved them from ruin. In addition, the resulting forests return an excellent revenue.

Two-thirds of the torrents of Europe are in France. In the Alps, the Cevennes, and the Pyrenees Mountains there are 1,462 brooks and

mountain streams which are considered dangerous. Nearly a million acres of mountain slopes are exposed to erosion by these streams, to say nothing of the flat land below.

As far back as the sixteenth century there were local restrictions against clearing mountain sides, enforced by fines, confiscation, and corporal punishment. In the main these prevented ruinous stripping of hill-sides, but with the French Revolution these restrictions were swept aside and the mountains were cleared at such a rate that disastrous effects were felt within ten years. By 1803 the people had become aroused to the folly of this cutting. Where useful brooks had been there now rushed torrents which flooded the fertile fields and covered them with sterile soil washed down from the mountains. The clearing continued unchecked until some 800,000 acres of farm land had been ruined or seriously injured, and the population of eighteen Departments had been reduced to poverty and forced to emigrate. By 1860 the State took up the problem, but in such a way that the burden of expense for reforestation was thrown upon the mountaineers, who, moreover, were deprived of much pasturage. Complaints naturally arose. An attempt was made to check torrents by sodding instead of by forest planting. This, however, proved a failure, and recourse was again had to planting, by the law of 1882, which provides that the State shall bear the costs. Since then the excellent results of planting have completely changed public sentiment. The mountaineers are most eager to have the work go on and are ready to offer their land for nothing to the forest department. In addition to lands secured by gift, the State acquires 25,000 or 30,000 acres a year. Over 500,000 acres have been acquired and more than one-half of this area has been planted. Already 163 of the torrents have been entirely controlled and 654 are beginning to show the controlling effects of the rest on their watersheds. Thirty-one of the torrents now entirely controlled were considered hopelessly bad half a century ago.

It is expected that 50,000,000 dollars will have been spent before the work of reforesting for protection is complete.

The sand dunes on the coast of France, mainly in Gascony, which the winds drove farther and farther inland, wasting the vineyards, have now largely been fixed in place by forest plantations which were begun in 1793. Of the 350,000 acres of sand dunes 275,000 have been planted in forest, and the dunes, instead of being a constant menace to the neighbouring farmers, now are growing crops of pine which produce valuable wood and resin. In all, about 2,000,000 dollars was spent in the work, and an additional 700,000 dollars was laid out in bringing the forests under administration. Now, though about one-half of the lands have been acquired by private persons and the State retains only about 125,000 acres, the State has received 120,000 dollars above all expenses, and possesses a property worth 10,000,000 dollars acquired virtually for nothing.

Some 2,000,000 acres of shifting sands and marshes toward the interior of the country, a triangular territory known as the *Landes*, has been changed from a formerly worthless condition into a profitable forest valued at 100,000,000 dollars. Reforestation was begun about the middle of the last century. This work was done principally by the communes, aided and imitated by private owners, and encouraged by the State. The resulting forest produces both pine timber and resin, upon the yield of which the present valuation is based.

La Sologne, in the central part of the country between the rivers *Loire* and *Cher*, was once densely wooded, but was for two centuries steadily deforested. By the beginning of the nineteenth century 1,250,000 acres had been utterly abandoned. Owing to the nature of the soil and sub-soil drainage was necessary as a first step toward reclaiming this land with forest. About the middle of the nineteenth century a committee of private citizens, under the presidency of the Director-General of Forests, began the work of reclamation. A canal 25 miles long and 350 miles of roads were built and 200,000 acres of non-agricultural land were planted with pine. In spite of the fact that one of the species planted proved a failure and another kind of pine had to be substituted, the reforestation work has resulted in a forest property worth £3,600,000, and land which could be bought for 16s. 8d. an acre fifty years ago is now yielding 12s. 8d. an acre net annual revenue.

The arid limestone wastes of the province of *Champagne* have been partly reclaimed by forest planting. Two hundred thousand acres planted at a cost of 10 dollars per acre, have now risen in value from 4 dollars to 40 dollars per acre, with a total value of 10,000,000 dollars and a net annual revenue of 2 dollars per acre.

The private forests of France are being freely sold. Speculators buy them, strip them, and sell them for grazing purposes. In this way hill-tops and hillsides are being rapidly denuded. This threatens erosion and the silting of farm lands in the valleys by the washing down of infertile soil. The terribly destructive floods of the present year could not have been so violent had the hills of France been kept clothed in forest.

In France, then, forestry has decreased the danger from floods, which threatened to destroy vast areas of fertile farms, and in doing so has added many millions of pounds to the national wealth in new forests. It has removed the danger from sand dunes; and in their place has created a property worth many millions of pounds.

In our next issue we will continue with a survey of forest practice in the remaining nine important countries of Europe, commencing with Switzerland.

The Oversea Wattle Bark Market.

NATAL AND AUSTRALIAN BARKS.

DIFFERENCES EXPLAINED.

IN our May issue we published a cable which had been received from the Agent-General for Natal in response to an inquiry from the Minister of Agriculture regarding the position of Australian wattle bark on the English market and the difference in price between barks from that country and from this. That cable was necessarily brief, but it served to show that Australian wattle bark occupied an unimportant place in the British imports of tan-barks, and that the difference in price was due to there being only small quantities of the Australian article available and to its superiority as compared with Natal bark.

Recent mails have brought more detailed results of the inquiries which the Commercial Agent (Mr. Harrison) has instituted; but before giving a summary of the information received, the following letter from the Director of the Imperial Institute (Professor Wyndham R. Dunstan) will be read with interest. This letter was addressed to the Commercial Agent and forwarded by Mr. Harrison to Natal. Prof. Dunstan writes:—

“Dear Sir,—With further reference to your letter of the 13th May relating to the differences between Australian and Natal wattle barks, I have consulted both tanning experts and brokers on the subject, and their opinions do not wholly agree.

“From the tanner’s point of view it would appear that there is undoubtedly a regular and noticeable difference between the prices of Australian and Natal wattle bark. It is stated that best broad-leaf golden wattle from Adelaide, Australia, usually contains more tannin than Natal bark, and for this reason generally realises about 10s. a ton more in the English market. It is, however, redder in colour and imparts a redder tone to leather, whilst it also gives a harder tannage than the Natal bark. The latter contains on an average 5 to 6 per cent. less tannin than Australian bark, and, although it furnishes a lighter coloured leather, it is generally priced at 10s. a ton lower than Australian bark.

“The opinion of the brokers whom I consulted does not altogether coincide with the statement of the tanning experts. The brokers place good ‘Natal’ and ‘Adelaide’ barks in the same class, containing an average of 25 to 30 per cent. of tannin. They state that the last price for Natal bark was £7 10s. per ton, c.i.f. Melbourne bark on the other hand, according to the brokers, contains as a rule only about 20 per cent. of tannin, and its value at the present time is about £7 per ton. The brokers

add that Natal and Australian wattle barks are not sold with any guarantee of the amount of tannin present, but contracts are made upon standard samples and comparative analyses made by buyers.

"Mallet bark contains a higher percentage of tannin than wattle bark, and is sold with a minimum guarantee of 42 per cent. of tannin, which is generally exceeded. Its present value is about £9 per ton.

"The following tables show the quantities and values of the exports of tanning bark from Australia during the years 1901 to 1906, and the destinations of the exports during 1905:—

Exports of Tanning Bark from Australia.

				Cwts.	£
1901	...	...	...	119,154	48,514
1902	...	...	...	127,193	54,607
1903	...	...	...	142,594	61,103
1904	...	...	...	251,986	93,927
1905	...	...	...	510,278	189,699
1906	...	...	...	431,896	162,453

Exports of Tanning Bark from Australia in 1905.

Destination.			Cwts.	£
United Kingdom	...	...	48,306	17,499
New Zealand	...	...	69,945	27,553
Other British Possessions	...	...	3,108	1,179
Germany	...	...	368,200	135,321
Belgium	...	...	14,902	5,667
Other Foreign Countries	...	...	5,907	2,480
			Cwts. 510,278	£189,699

"These figures are taken from the official trade returns of the Australian States. These returns do not distinguish between 'wattle' and other tanning barks, and it is probable that the very large increase in exports shown in table I. in the years 1904-1906 is due to exports of mallet bark.—I am, etc.,

"WYNDHAM R. DUNSTAN."

The inquiries made by the Commercial Agent have been extensive, and a number of interesting replies have been received by him. Of these we may give the following summary:—

The Commercial Intelligence Department of the Board of Trade quotes the latest c.i.f. prices London as £7 10s. for Natal bark and £8 to £10 for Australian. The difference is accounted for by reason of the fact that certain traders prefer Australian wattle bark. The Adelaide

bark is also of superior quality. The imports from Australia in 1906 were 760 tons.

Messrs. Arndt & Cohn (a well-known firm dealing with large Continental consignments) state that there is no uniform price for Australian wattle bark. About £10 c.i.f. Continental ports is quoted; but quotations vary according to district in which the bark is grown. Higher prices are obtained because the bark is better and has been longer known, and because tanners are conservative. The Australian wattle bark is also finely ground, and is used principally in Great Britain. German tanners, it is stated, prefer Natal bark. Messrs. Arndt & Cohn consider that there is no reason to fear Australia as a competitor; by far the greater part produced in that country is used locally.

Messrs. Boucher, Mortimer & Co., an important firm of wattle brokers, confirm, in the information they give regarding price, that already given; and they also state that the quantity of wattle bark imported from Australia is very small. Mallet bark is exported from Australia in larger quantities, and realises about £9 per ton c.i.f. London. They strongly reiterate the views expressed in their letter published in the *Natal Mercury* in April. (We print the letter in question below.)

Messrs. J. W. Anderson & Co., another important firm of wattle brokers, supply the following relative analyses of Australian and Natal wattle barks:—Australian bark from New South Wales—green wattle—gives 36 to 39 per cent. of catechol-tannin; Australian bark from Adelaide—golden wattle—gives 40 to 50 per cent. catechol-tannin; South Australian black wattle gives 30 per cent. catechol-tannin; Natal—mostly black wattle—gives 30 per cent. catechol-tannin. The Mount Benson mimosa (Golden wattle) gives exceptionally nice bark for colour, texture in grinding, and tannic value. Probably this description, Messrs. Anderson and Co. remark, known in Australia as the “broad-leaved mimosa,” requires a special soil, etc., to yield the quality desired. Grinding, it is stated, is a saving of 15s. a ton to tanners, but Natal bark is preferred chopped, as, in working, tanners like to use it freshly ground. Natal bark ground is not encouraged. Very little business has been done in recent years in Australian bark; especially to United Kingdom ports.

Messrs. Mitchell Cotts & Co., who are large importers of wattle bark, remark that practically no wattle bark is now being exported from Australia, and add that the consumption in that country is steadily increasing. They consider that no comparison can be made between Natal and Australian wattle bark, as the latter is shipped in different qualities with different prices according to colour and percentage of tanning matter. Much depends on the soil on which the bark is produced. The freight on Australian bark to London fluctuates according to conditions. A recent shipment was 27s. 6d. per ton weight. Another firm, however, quotes 35s. per ton.

The London Office of New South Wales informed the Commercial Agent that latest advices from Sydney showed that the demand for wattle bark was very active and the supply tight. Quotations (per ton) were as follows:—Prime, £8 5s. to £8 10s.; medium, £7 15s. to £8 2s. 6d.; light, £7 5s. to £7 12. 6d.; inferior, £1 10s. to £4 5s.

BARK *versus* EXTRACT.

The following letter, addressed in the first instance to the Editor of the *Natal Mercury*, was handed to the Commercial Agent by Messrs. Bortcher, Mortimer & Co., who wish to reiterate the statements made therein. As will be seen, the writers consider that there is no need for the establishment of an extract factory in Natal, which they believe would not increase the oversea consumption of our bark:—

SIR,—Mr. C. D. Keith Fraser's letter in your issue of the 3rd of February is interesting reading. Perhaps you will allow us, as the firm which first introduced tanning extract (hemlock) to the European market in the year 1864, and as having been engaged in the handling and manufacture of hemlock, oakwood, chestnut, and wattle extracts for the past 40 years, to make a few remarks on Mr. Fraser's statements. Mr. Fraser seems to think that, because the use of extracts is increasing yearly, therefore there would a greater demand for wattle extract than at present exists for wattle bark. The extracts chiefly used in the United Kingdom are chestnut, oakwood, and hemlock, and the tanners who employ these extracts are not, as a rule, large users of wattle bark, nor can we see any reason to suppose that they would be likely to increase their consumption of wattle even in the form of extract, unless, indeed, its relative price were considerably lower than that of wattle bark. The English extract tanner seeks above everything a material which will give weight, solidity and colour to his leather, and these are qualities which are somewhat wanting in wattle, at any rate as far as sole leather is concerned. In the years 1891-2 we received consignments of a wattle extract of good quality from Adelaide, but, though the article was well introduced here, the demand from English users of wattle bark was very limited, and we had to find an outlet in Germany, where the extract sold freely at from £13 to £16 per ton, Australian wattle bark at that time being worth about the same price. Eventually wattle extract was ousted from the German market by quebracho, and the price fell to £8 per ton, with the result that the Adelaide factory had to shut down. At the time to which we refer, there was no duty on extract entering Germany. There would now be a duty of £2 per ton on fluid, and of £4 on solid wattle extract, while wattle bark is on the free list. It does not seem probable that any large increase in the English or German demand for wattle can be anticipated from its coming on to the market in the form of extract, and, as regards the United

States, it is questionable whether wattle extract could ever compete after the duty had been paid with the low priced chestnut produced in Virginia and Pennsylvania. The principal object in making an extract is to concentrate a raw material weak in tannin, and so economise freight and handling. In the case of wattle bark, Nature has already done this concentration, and, therefore, the advantage to be gained by extracting the tannin is less than in dealing with weaker materials. There is not the slightest difficulty, given the requisite knowledge, in making a good wattle extract, but whether it would pay is a different matter, and we think that the members of the Natal Wattle Bark Union would be rather surprised at the cost of a really up-to-date factory "capable of dealing with half the total output of the Colony." If, however, the Union wishes to build a factory, we can put it in the way of doing so, and of manufacturing and selling the extract, but, in the words of *Punch's* "Advice to persons about to marry," we would say, "Don't." Mr. Fraser's fear of "possible monopoly under patent" is quite illusory.—We are, etc.,

BOUTCHER, MORTIMER & CO.

P.S.—Has Mr. Keith Fraser considered the question of the supply of casks, and the cost of this item per ton of extract?

To have fertile eggs, discard males that are overfat, overgrown and sluggish, and substitute younger and more active birds.

During the five months ended 31st May of this year 29,312,472 lbs. of mealies in the form of "corn, grain and meal," valued at £60,873, were exported oversea from Durban, as compared with 5,580 lbs. only during the same period of last year, valued at £28.

The Minister of Agriculture has declared that certain farms, the property of Mr. W. Baynes, in the New Hanover Division, shall, for the purpose of the East Coast Fever Act, be deemed a portion of the Magisterial Division of Umgeni, and all restrictions or regulations in force in the Umgeni Division will also be operative as regards these farms. The farms in question are Wactenbeetje's Draai, Izamen Koomst, Mooiman's Neus, and portion of Eland's Kop.

Durban and Coast Society.

ANNUAL AGRICULTURAL SHOW.

ON Thursday, the 16th of July, the Durban and Coast Society of Agriculture and Industry opened their annual show at Lords Grounds, Durban. The show lasted three days amid ideal weather conditions, and proved a most successful event, beating all previous records with a total of 3,267 entries—an increase of 450 over the number for last year. The number of entries under each class was as follows:—*Horses*: Thoroughbreds, 44; cart-horses, 10; Hackneys, 8; Cleveland Bay and Yorkshire coach horses, 1; polo ponies, 18; harness classes, 102; saddle classes, 79; total horses, 262. Donkeys, 4; mules, 1; sheep, 150; goats, 16; pigs, 44; S.A. agricultural produce, 286; fresh table fruits, 99; vegetables, 93; Natal sugar, 15; coffee, tobacco, etc., 41; Natal tea, 2; honey, etc., 26; dairy produce, meat, etc., 151; S.A. sundry products, 71; home-made productions, 246; miscellaneous, 54; agricultural machinery and implements, 48; S.A. made carriages, carts, etc., 27; machinery and general exhibits and industrial stalls, 44; poultry, 760; dogs, 615; sports, 196.

At one o'clock on the 16th the formal opening took place, when His Excellency the Governor delivered the following address:—

“At the last agricultural show I opened I had to condole with the organisers at the falling off in exhibits, due directly or indirectly to East Coast Fever, and to general depression. Here I have the more pleasant task of congratulating the Durban and Coast Society of Agriculture and Industry on a notable increase in the number of entries in spite of the fever and depression. As regards the former scourge, no doubt Durban shows have been less dependent on cattle exhibits than those up-country; as for the depression, it is possibly not quite as general as it was a short time ago. Against the circumstances unfavourable to our show there are some conditions in its favour. The always increasing number of visitors that are attracted to Durban in the winter months from other parts of South Africa by the natural advantages of the place, and by the arrangements made for their entertainment by our progressive Corporation, ensure the exhibition being well patronised, and that in itself is an encouragement to exhibit. The greater patronage of the public has further been secured this year by the new arrangement which combines in one exhibition the annual shows of the Agricultural Society, of the Kennel Club, and of the Poultry Club. But probably the chief reasons for the increased success of the show this year, and certainly the only ones on which I base my hope for its continued advance in years to come, are extension of agriculture and growth of industry. Here at the junction of the three railway

lines—the Main, the North Coast and the South Coast—and readily accessible to upland, midland, coast and Zululand producers, our Show will always reflect such extension and growth. I trust that while reflecting it will also fulfil its main object of stimulating production, not only for home consumption, but for that export trade which is to bring money to this country for its further development, and for the attraction of the additional white population essential to its ultimate welfare. I am convinced that the value of produce—agricultural and mineral—that will go through our port in the future will be the measure not only of the prosperity of Durban, but of the prosperity of that part of South Africa that lies between the Drakensberg and the Indian Ocean. But a port cannot well exist on traffic in one direction only, and we look, as we have a right to look, to the Government of the Transvaal now, and to the Government of South Africa in the future, to secure again for Port Natal conditions not less favourable to its existence than those arranged 14 years ago with the Government of the Transvaal Republic. (Applause.) But it is not for me, nor is this the occasion to enter into matters political. There is, moreover, a purely agricultural subject with regard to which I feel keenly, and would take the opportunity afforded by my meeting farmers here to-day, briefly to mention. Mr. Choles, the statistical officer of the Department of Agriculture, has written a letter which appeared in the papers of yesterday and the day before urging farmers to fill in, as completely and carefully as they can, the forms which will shortly be sent to them in connection with the agricultural statistics of the Colony. I will not repeat the arguments contained in this letter, but will ask farmers to read it, and the sensible leading article on it that appeared in yesterday's *Witness*. If they do, I have no doubt that they will comply with Mr. Choles' request, and that will be of great assistance to people like myself who, though they may not be practical farmers, are greatly interested in the agricultural development of the country, and wish to study that development by the light of accurate figures. (Hear, hear.)

“Ladies and gentlemen, I will not keep either practical farmers or students of agricultural development longer from the lessons to be learnt at the eighth annual show of the Durban and Coast Society of Agriculture and Industry. I accordingly declare this Show and those of the Natal Kennel Club and Durban and Coast Poultry Club to be open.”

In spite of the ravages of East Coast Fever in many districts of the Colony and the consequent elimination of the cattle entries, which are always the most important section of an agricultural show, the Show was an excellent one, and in several respects was superior to that of last year. Considerations of space preclude a detailed reference to the various sections of the exhibition, but some passing comment may be offered in respect of a few of the leading classes. The sheep were of excellent quality, the wool being, generally speaking, considerably softer and finer

than has been the case at previous shows, whilst the animals were largely built and of good shape. Some exceptionally good animals were shown in the carriage horse section; the harness classes, in fact, comprised a very large number of entries. Pigs also were largely entered, and offered a fine exhibition. The Berkshire class was the largest subscribed to, and contained some fine fat boars. There was a fine collection of poultry; and in the egg classes there were some fine exhibits, with a keen competition. The butter exhibits were not perhaps up to the standard of previous years, and some of the exhibits were not shown in very attractive packages. Evidence was afforded in the bee classes of the increasing interest which is being taken in the Colony in honey production, there being a great advance noticeable in the exhibits as compared with previous years. Competition was, however, restricted almost entirely to Coast producers. Competition was keen in the pulse classes, which were remarkably well represented.

The following is a list of the judges and stewards who officiated at the Show:—

Thoroughbreds and Champion: Judge, Mr. J. Piccione; steward, Mr. F. L. Goble.

Cart Horses and Champion: Judge, Mr. W. Craig; stewards, Messrs. Colin Wilson, W. D. Kimber, S. T. Amos, M.R.C.V.S.

Hackneys and Cleveland Bays and Champion: Judge, Mr. P. D. Kimber; stewards, Messrs. J. Swales, A. J. Swales, G. O. Edwardes, J. Livingston, C. C. Randles.

Polo: Judge, Colonel Sir Duncan McKenzie, K.C.M.G.; stewards, Messrs. Oliver Davis, W. Greenacre, B. R. Swales.

General: Judge, Mr. P. D. Kimber; stewards, Messrs. C. T. W. Swales, R. E. Goble, J. B. Goodman.

Harness Horses: Judge, Mr. J. Piccione; stewards, Messrs. R. A. Ebstein, M. A. Evans, H. B. Evans.

Saddle Horses: Judge, Colonel Sir Duncan McKenzie, K.C.M.G.; stewards, Messrs. W. Anderson, W. Buttery, A. H. Burman.

Mules and Donkeys: Judge, Mr. C. Jackson; stewards, Messrs. John Arthur, W. R. Atkinson.

Mounted Messengers: Messrs. F. Taylor and C. Alexander.

Hon. Veterinary Surgeon: Mr. J. McNeil, M.R.C.V.S.

Sheep—Merino (fine and robust woolled) and Champions: Judge, Hon. A. G. Robertson, M.L.C.

Shropshire Down and Champion: Judge, Mr. A. K. Anderson.

Down—other than Shropshire: Judge, Mr. W. J. Thompson.

Persian: Judge, Mr. P. D. Simmons.

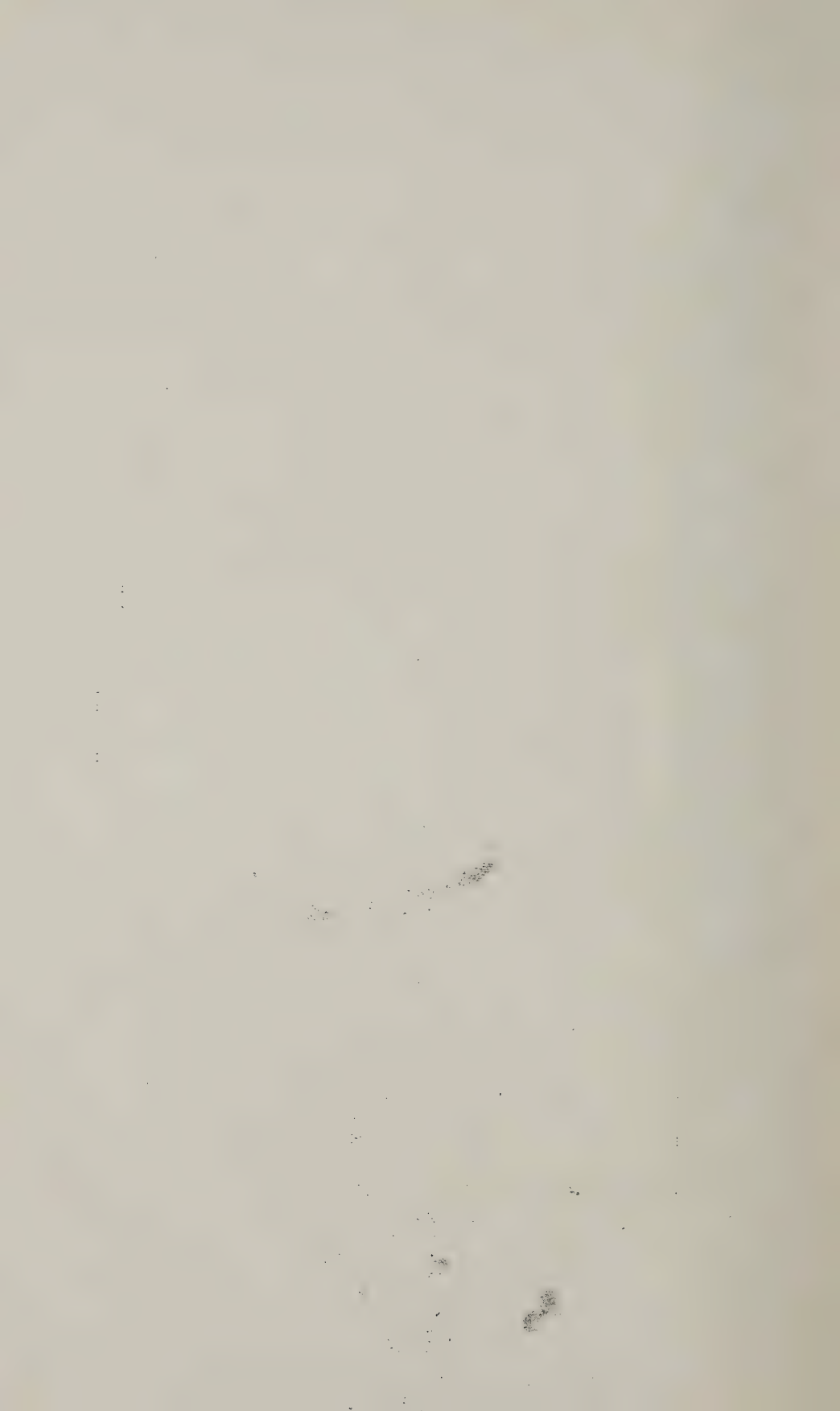
Long Wool, Crossbreds and Fats: Judge, Mr. W. J. Thompson.

Angora Goats: Judge, Mr. P. Otto, J.P.

Pigs: Judge, Mr. John Marwick.



THE CATERPILLAR TRACTOR.
(See Article.)



Agricultural Produce.—Grains and Specials: Judge, Mr. J. Westbrook; stewards, Messrs. F. Stevens, C.M.G., T. Burman.

Roots and Specials: Judge, Mr. A. Reid; stewards, Messrs. P. G. Stiebel, F. Tunmer, E. D. Goble.

Table Fruits: Judge, Mr. Claude Fuller; stewards, Messrs. F. L. White, W. Gilbert, J. J. Topham.

Vegetables: Judge, Mr. W. C. Johansen; stewards, Messrs. W. A. Bath, S. Deane, P. Franks.

Natal Sugar: Judges, Messrs. A. S. Goble and J. L. Malcolm; stewards, Messrs. W. Poynton, W. C. Robarts, W. C. Dawber.

Tobacco, Coffee and Cotton: Judge: Mr. E. R. Sawyer; stewards, Messrs. G. W. Cook, A. Williamson, H. Burman, Alex. Pardy.

Honey: Judge, Sub-Inspector Stanley; stewards, Messrs. F. Monhaupt, P. Russell, J. Carrugati.

Dairy Produce: Judges, Messrs. A. Lawrence, John Marwick, J. Hoatson; stewards, Messrs. J. Arthur, W. Payne, J. M. Wilson, A. G. L. Houghting, M. E. Hamlin, Gordon Kirby.

South African Sundry Products: Judges, Messrs. W. P. Brokensha, W. Merrick, H. H. Puntan; stewards, Messrs. F. Dore, J. P. Tod, G. L. Dalten, P. Piccione.

Home-made Productions: Judges, Mesdames E. W. Evans, Meyrick Bennett and Edwards.

Basket-ware and Osiers: Judge, W. C. Johansen.

Miscellaneous.—Leather and Harness: Judge, Mr. A. A. Gibson.

Horse Shoes: Judge, Mr. J. McNeil, M.R.C.V.S.

Sundries: Judges, Messrs. John Fletcher and J. M. Wilson.

Agricultural Machinery and Implements: Judges, Messrs. John Moon, J. S. Stewart, H. W. Bull, W. J. Mirrlees.

Dairy Goods: Judge, Mr. A. Lawrence.

Carts, Carriages, Wagons: Judges, Messrs. D. Taylor, M.L.A., and W. E. Goodwin.

Farriers' Competition: Judge, Mr. J. McNeil, M.R.C.V.S.

Live Weight Judging: Judge, Mr. H. Sparks.

Sports: Judges, Messrs. P. D. Simmons, W. D. Kimber, Colonel Sir Duncan McKenzie, K.C.M.G.; stewards, Messrs. W. Greenacre and stewards for horse sections.

Yard Manager: Mr. F. L. Goble.

Gate Steward and Hon. Treasurer: Mr. Edwin Greenacre.

Keep the fences in good repair, then the dairy herd will not break into the corn or meadow.

The "Caterpillar" Engine.

A NOVEL METHOD OF TRACTION.

We publish herewith an illustration of a tractor which represents a curious mode of propulsion recently invented by Mr. David Roberts, M.I.M.E. This machine constitutes a new development in traction, as, briefly, its object is to *crawl* over the ground, there being a series of feet disposed along the periphery of two heavy side chains passing over fore and aft wheels. As this chain revolves, the feet are successively brought into contact with the ground, thereby impelling the machine forward and backward. Because of its peculiar movement, the soldiers at Aldershot, where it is in operation, promptly christened it the "caterpillar."

The engine is described in a recent number of the *Scientific American*, to which we are indebted for our information as well as for the illustration which appears herewith. It is interesting to note that the tractor was evolved as a result of the difficulties encountered in transport operations during the South African war, where the heavy guns could be hauled only by powerful traction engines, but the movements of which were hampered by the absence of suitable roads. Much of the country in which the military operations were conducted was either rough and broken or sandy. The wheels of the traction engine sank up to their axles, and were only extricated with difficulty. Numerous dongas and torrents also constituted a severe obstacle to progress. In view of this limited radius of action possible with traction engines of the ordinary type, the military department encouraged the evolution of a new design of tractor, to which rugged configuration of the ground or unstable earth would offer no impediment. The present apparatus is the outcome of this investigation, and it has proved remarkably successful, hills, banks, marshy, sandy and rough soil, ditches and other obstacles being negotiated with equal facility and at fair speed.

The engine acquired by the War Office develops about 40 horse-power. The motor is of the Hornsby double-cylinder internal-combustion heavy-oil type. The military engineers submitted the chain tractor to a prolonged series of heavy trials in the sandy and swampy stretches in the vicinity of the Aldershot camp, the results of which exceeded anticipations. Owing to the success of these experiments, the inventors built a second oil-engine-propelled tractor, developing some 20 horse-power, and in order to demonstrate the capabilities of the gasoline motor in the same field, constructed a 30 to 35 horse-power motor car with trailer. The latter two, though of less horse-power than that constructed for the War Office, present the same features and perform the same remarkable achievements as

the more powerfully equipped engine now in use at Aldershot for the haulage of heavy guns, baggage, and general military stores.

Some idea of the design of the engine will be gathered from the accompanying illustration. An endless chain travels around driving wheels of substantial steel construction and provided with teeth on their periphery so as to form enlarged sprockets. The chain track is provided on its outer surface with a number of feet shod with rubber or wooden threads tied together with intermediate locking links, which render the bottom portion of the chain rigid, so as to form an arc with a radius of about 19 feet. The links which render the chain rigid when pressure is exerted from the outside make it flexible on the inside, so that it bends around the two sprocket wheels situated at either end of the arc. The rear one of these is the driver, which, the sprockets being engaged on the links, propels the engine by pulling at the chain, the latter being held to the ground by the weight, while the weight-carrying wheels pass over the inside track. The upper part of the chain pulled over by the driving wheel moves forward, and is guided by the front sprocket wheel to form a fresh and endless track. The weight of the tractor being carried on the long curved inverted arch of the chain, the pressure on the ground varies with its condition; and while on hard roads the pressure is less than with ordinary wheels, on soft ground the weight is so distributed that it can travel with safety where draft animals may not venture. The grip on the ground is vastly greater than it is with ordinary wheels, so that great loads can be hauled over ground which has hitherto been impassable. The chain track has a radius which is equal to a wheel 38 feet in diameter.

When it is required to turn, one of the chains is braked hard and the other allowed to travel.

In the gasoline tractor the whole weight of the vehicle is supported and balanced on the two inner wheels, midway between the end wheels and engaging with the inner lower surface of the chain, there being two such wheels on either side. The small wheel mounted above these simply takes the weight of the upper part of the chain. In the larger oil tractor built for the War Office three wheels are disposed on either side to fulfil this end, but we understand that the first-named arrangement has proved more satisfactory, and will be adopted in all future vehicles.

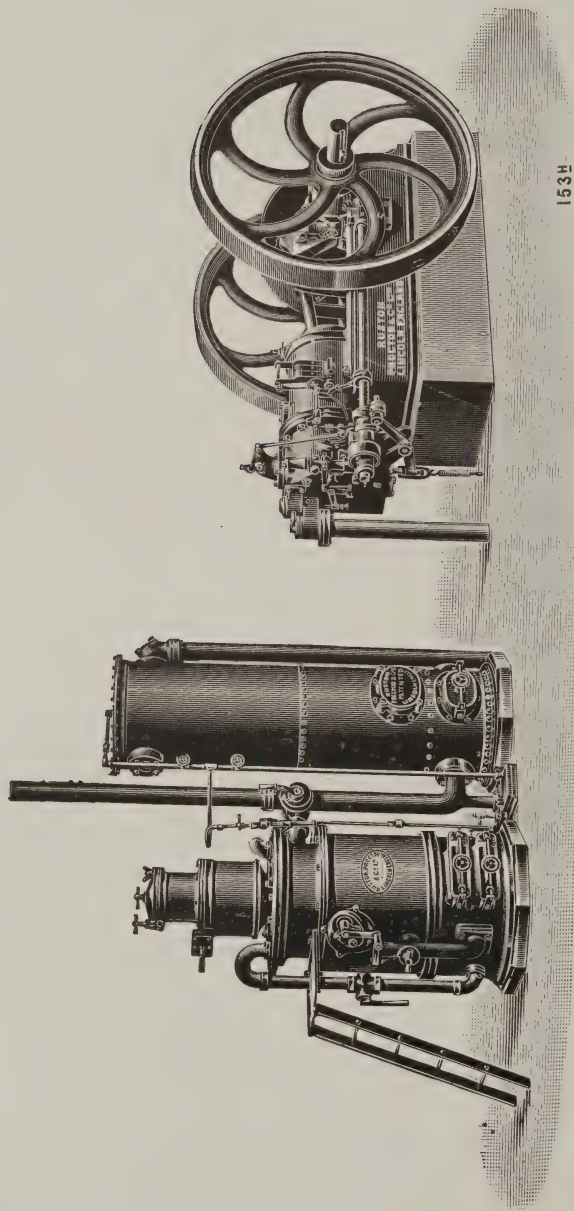
Steering is effected by a wheel mounted in the usual manner, the rotation of which in either direction operates the brakes controlling the movement of the chains. For instance, if it is desired to turn to the right, the steering wheel is revolved in that direction as usual, and in so doing applies the brake to the right-hand side of the compensating gear, the radius of the turn varying with the pressure exerted by the brake. It will thus be seen that steering is perfectly simple and effective, and should the vehicle be caught in unusually difficult ground, it can easily extricate itself by a slewing or worming action with the steering gear.

Owing to the increased area of the surface brought to bear upon the ground, not only is the weight distributed over a larger area, but an increased adhesion surface is secured. Consequently, even when passing over the softest soil, the engine does not sink to any depth, while at the same time even upon loose or slippery surfaces, a firm purchase can be obtained without the slightest tendency to slip or skid.

The experiments conducted with the vehicles have been especially severe. In one trial a lorry loaded with three tons was hauled by five horses into a swamp, where the vehicle sank to the axles, and from which position the horses failed to extricate it. By means of the tractor, however, the load was dragged out with ease. Similarly, a two-wheeled vehicle laden with 1.5 tons was hauled into the swamp by four horses, and, after sinking into the loose soil, it resisted the efforts of the animals to withdraw it, the horses themselves sinking to a depth of two feet under the powerful effort they exerted. In this instance similarly the vehicle was quickly drawn out by the chain tractor. In order to demonstrate the efficiency of the chain track system itself over the ordinary type of wheels, two horses were harnessed to the chain tractor, which represented a total weight of 3.75 tons, and with the engine gear disconnected to enable the chain to travel freely, it was easily hauled through the bog, neither the horses nor load showing any tendency to become stalled, while the imprint of the feet of the chain was only about two inches. Subsequently, the engine of the tractor was reconnected, and with a trailing load of five tons attached, the whole was driven through the swamp, and various manoeuvres executed in the softest part without imposing the slightest strain upon the engine, thereby testifying to the value of the chain track system.

The engine also displayed its unique possibilities in the negotiation of obstacles in its path. When an ordinary wheel meets such an obstruction, it has to lift itself together with the whole of the super-imposed weight. In the case of this tractor, however, the encountering of any obstacle simply gives a slight inclination to the chain track, which being raised forms a bridge for the weight gradually to surmount.

For haulage purposes the manufacturers have evolved a special chain track for application to trailing vehicles, the utilisation of which facilitates the operations of the tractor itself and enables high speeds to be maintained under the most difficult circumstances. Efforts are now being made to simplify the system of animal traction by applying the principle to the wagon, since trials have shown that horses can haul vehicles thus equipped with far less exertion than the ordinary wheeled types.



THE RUSTON-PROCTOR SUCTION GAS ENGINE.
(See Article.)

Irrigation Machinery.

MR. THEO. ROSITZKY'S NEW INSTALLATION.

It is a well recognised fact that the future prosperity of this country depends to a very great extent upon the development of our agricultural resources, and how best to develop these resources is a question in which everyone who has the interests of the country at heart is greatly interested at the present time. There is no doubt but that one of the most important, if not the most important, factor in this problem is the question of artificial irrigation, as in almost all parts of the country the rainfall is such an uncertain element that it is impossible for farmers to depend upon this alone, without having to face the risk of losing their entire crops owing to the want of sufficient moisture. Whilst large schemes, involving thousands of pounds, and carried out by powerful companies or with the assistance of the Government, can be of the greatest benefit, such schemes can naturally only be carried out to a very limited extent and in specially favourable localities, and it is rather by the installation of numerous small schemes erected by individual farmers, to develop their own resources that the greatest practical benefit to the farmers themselves and the country as a whole can be derived.

There is one farmer at any rate who has not only grasped this fact, but has had the courage and enterprise to act upon his convictions, as we understand that Mr. Theo. Rositzky, of Port Shepstone, has recently erected one of the most up-to-date irrigation plants in the country. This plant consists of an 18 B.H.P. Ruston-Proctor Suction Gas Engine, working a Gould's High Lift Rotary Pump. The water is pumped out of a river and delivered through some 800ft. of 5in. piping to an elevation of about 80ft. in one direction and through 500ft. of 4in. piping to an elevation of 40ft. in another direction. The estimated capacity of the plant is about 15,000 gallons of water per hour, and, although this is a small quantity compared with what can be obtained by the same expenditure under more favourable conditions, it enables a very considerable acreage of fertile land to be placed under cultivation. This particular farm furnishes a striking instance of what can be done by artificial irrigation, as, owing to its sheltered position, the annual rainfall is so low that it was formerly practically useless for agricultural purposes, whereas now, by the expenditure of a very moderate sum on irrigation works, large quantities of lucerne, forage, potatoes, etc., can be planted with the assurance that abundant crops will be reaped.

A few words should be said regarding the type of engine used with this plant. That suction gas engines are the power of the future, owing to

their low working cost compared with oil, steam or electricity, is now an acknowledged fact in the engineering world. It is estimated that under favourable conditions the cost of working a suction gas engine is only about one-tenth of a penny, or even less, per brake horse power per hour, and this type of engine is stated to be particularly suitable for driving pumps for irrigation purposes, as well as for driving milling machinery, refrigerating machinery, or similar plants where low working expenses are of primary importance. Suction gas plants are now being made on an extensive scale by all the leading English engineering firms and are extensively in use in Great Britain. The principal drawback to their equally extensive use in this country has in the past been the difficulty of adapting them to work on Natal coal, but the problem has apparently been solved by Messrs. Ruston, Proctor & Co., Ltd., who, after careful and exhaustive experiments carried out at their works, have succeeded in adapting their engines to give the same thoroughly satisfactory results when working with Natal anthracite coal as with the best Welsh coal. The trouble experienced with the gas engine plant supplied to the Johannesburg Municipality has also served to somewhat prejudice this type of engine here, but we believe that the Johannesburg plant is what is known as a pressure gas engine and works on an entirely different principle, and, in fact, is an entirely different class of engine, to a suction gas engine. The Ruston-Proctor Suction Gas Engine certainly seems to be a model of simplicity and reliability, requiring very little attention, and for safety, ease of handling and efficiency generally, would seem to compare favourably with any other form of motive power.

We understand that Mr. Rositzky's plant has been designed and installed throughout by Messrs. Malcomess & Co., Ltd., of Durban, and they are certainly to be complimented upon the expert and successful manner in which they have carried out their contract, as also is Mr. Rositzky in investing in this up-to-date machinery, from which we have no doubt but that he will derive the benefit and profit which his enterprise so well deserves.

Dairying is like any other business, because the profit of it depends on growing into it gradually and expanding as experience is gained.

All the hives in an apiary should be made of one design out of well seasoned white pine or other white wood. They should be planed inside and painted blue outside.

Natal Land Board.

MONTHLY MEETING.

THE Land Board held its usual monthly meeting on the 23rd and 24th June in the offices of the Surveyor-General, and was able to recommend twenty-nine applications for land for the favourable consideration of the Minister of Agriculture. The Board had to refuse twelve applications on account of some of the applicants already owning land in either Natal or the O.R.C., and certain of the same being half-castes.

The new arrangements brought into force by the Board at its last meeting—whereby applicants for land are saved the expense of travelling to Maritzburg to attend the Board meetings through interviewing any one member of the Board at the different centres—has proved very satisfactory. Some twenty applicants having been dealt with under this new method, which has not only enabled the Board to get through its work more quickly, but has proved a boon to intending settlers.

The Minister of Agriculture (the Hon. W. A. Deane) met the Board, and discussed various matters which were on the agenda paper. As all the small holdings at Illovo have been allotted the Minister authorised the immediate advertising of similar allotments of land at Winkel Spruit.

In view of applications having been received for some sugar farms south of the Umfolosi River, Zululand, and lying east and west of the railway, the Minister instructed that the lands in question should be advertised as available for allotment. The lands referred to are considered eminently suitable for the cultivation of sugar cane, and consist of an area of 20,000 acres, for which applications will shortly be invited.

With regard to the applications that are to be called for from persons desirous of taking up small holdings for agricultural purposes at Winkel Spruit, the Chairman of the Board, Mr. Acutt, asked that it should be notified in the advertisements to be placed in the papers, that intending applicants could interview him in Durban on the 3rd July in the Conference Room, Natal Government Railway Offices, at 10.30 a.m.

The Superintendent of Settlements (Mr. A. H. Bennett) in his monthly report, stated that a number of intending settlers had visited Winterton within the past month, who would shortly be applying for land there under the proposed amended regulations. Within the past month four of the irrigated blocks have been taken up.

Mr. Bennett also referred in his report to the fact that four of the Winterton settlers would probably harvest 730 bags of kafir corn, which crop had been grown on the dry lands belonging to the settlers in question.

The Board was pleased to note that there appeared to be every prospect of the whole of the Winterton Settlement being shortly taken up.

Laboratory Notes.

By ALEX. PARDY, F.C.S., etc., Analyst.

BEET SUGAR.

IN the following table will be found particulars of a number of analyses recently performed on samples of beet grown in Natal during the past season:—

BEET ANALYSES.

Variety.	BEET.				JUICE.						
	Moisture.	Sugar.	Average Weight of Plant.	Average Weight of Cleaned Roots.	Specific Gravity at 60° F.	Total Solids.	Sugar.	Organic Impurity.	Purity.	Ash.	Saline Co-efficient
			ozs.	ozs.							
* Cooper's Silesian...	75·09	16·22	46	32	10918	20·68	18·53	1·38	89·6	0·77	24·0
† Klein-Wanzelebener ?...	76·45	15·74	45	31	10855	19·49	16·98	1·51	87·1	1·00	16·9
‡ Do. ...	82·04	13·72	...	28	10720	17·19	15·03	1·28	87·4	0·88	17·1
‡ White's Vilmorin...	81·38	13·36	31	24	10700	16·98	15·00	1·30	88·3	0·68	22·0
* Klein-Wanzelebener...	78·96	12·43	52	35	10745	18·10	14·04	3·27	77·5	0·79	17·7
* French Very Rich	79·36	11·24	21	11	10710	16·60	13·20	2·59	79·5	0·81	16·2
|| Klein-Wanzelebener ?...	79·84	11·94	60	36	10683	16·25	12·77	2·44	78·5	1·04	12·2
* Do. ...	81·54	10·27	59	48	10590	14·90	11·47	2·27	76·9	1·16	9·8
* Cooper's Improved Green Top	85·01	8·91	44	34	10515	11·88	9·52	1·33	80·1	1·03	9·2
* Pink Top Half Sugar Mangel ...	87·89	7·38	53	46	10400	9·68	7·66	1·03	79·1	0·99	7·7

WHERE GROWN:

* Cedara. † Camperdown. ‡ Inchanga. || Thorny Bush.

It will at once be seen that roots of a high quality can be produced in the Colony, but it must be borne in mind that these are samples only and represent the production of comparatively small areas, and are the outcome of one year's trial only. They, however, afford very good grounds for more extensive trials, and are at least sufficient to warrant the planting of larger areas throughout the more suitable districts of the Colony in order to determine with a greater degree of certainty the adaptability of the soil, climate and other conditions for production of the crop on a larger scale. Moreover, such trials would have the additional advantage of familiarising agriculturalists with the treatment and routine necessary for such a specialised crop, and would to some extent indicate the possibilities and magnitude to which farmers would contribute towards the supply of roots for manufacturing purposes. One essential requirement to the prosperity of such an industry as that of the manufacture of beet sugar is that a sufficient supply of the roots shall assuredly be forthcoming. Roots grown under these conditions in the absence of a local factory may be utilised to advantage as a stock food.

FIBRE.

Natal is capable of growing some of the well known commercial fibres to advantage, and it is generally advised that such should receive first attention, as a market and standard prices are always open for such products, and they do not appear there with uncertainty as to their reception. New fibres with which manufacturers are unfamiliar have to find their way into favour, and, unless they are of superior quality, require much support and promise of uniform supply to insure their reception. Occasionally new fibres of undoubted value are discovered, and these in time find a use and demand that compels attention to their production, which increases as their quality becomes appreciated.

Regarding the fibre of an indigenous plant recently observed at Manderston, Mr. J. Medley Wood, Director of the Botanic Gardens, Durban, writes to the Under Secretary of Agriculture as follows:—

“I have examined the specimen of the plant from which Mr. Hutton obtained the fibre, a specimen of which you kindly sent to me. The plant is *Pavonia columella* (Cav.) This plant belongs to the Order *Malvaceae*, an Order which, in addition to the ‘Cotton Plant,’ contains other species which yield fibre of more or less value, but of the fibre obtained from this species I have no special report. As I said previously, it is deficient in strength, but whether that is caused by the method in which the sample has been prepared I am unable to say. Then there is an unusually large quantity of tow, which should be separated before any reliable opinion can be formed of its value. I would, therefore, recommend that a good sample of the fibre should be sent to the Institute of Commercial Research at the Liverpool University, or to the Imperial Institute, for report, but I cannot

think that its value will be found to be greater than that of jute, if even so much as that, but I shall be glad to have my opinion confirmed or otherwise."

A sample of this fibre was submitted to examination at the Laboratory and found to react as follows:—

Moisture—9.1 per cent. at 100 degs. C.

Ash—0.87 per cent.

The loss on hydrolysis by a dilute solution of sodium hydroxide showed that its resistance to moisture and alkaline liquids was good, but under the heading of mercerising, where the fibre was subjected to strong alkali, the degrading action was very apparent.

The amount of cellulose present, which consisted mostly of ligno-cellulose, was very good, as was also the ultimate length of the fibre. The length of the staple averaged 62 inches.

The cleaned fibre was slightly coarse, of a good colour and slight glossiness, but the sample as a whole was badly prepared and contained much adhering foreign matter.

The chief defect, however, as pointed out by Mr. Medley Wood, was the lack of strength, and this deficiency will probably have a detrimental influence on its commercial value.

PHOSPHATIC ROCKS.

Some time ago hopes were entertained that phosphatic deposits of a payable nature had been brought to light in Natal, but apparently further investigation has not led to development of these sources.

Recent prospecting, however, has revealed what are likely to prove valuable storehouses of this material, and it is quite possible that there is yet a good deal of wealth of this nature still to be discovered. Huge quantities of phosphatic materials in the form of superphosphates, bones, and slag are imported into South Africa annually to supply the requirements of our crops; in fact, the phosphates form the basis of nearly all our manures. The demand for such is yearly increasing, and opens up an enormous field for the fortunate owners of such a commodity.

It behoves those interested to be on the outlook for such minerals; these may be found in a diversity of colours and forms, from rounded rough sandy looking bodies to larger and more compact masses; they are generally amorphous, but may be crystalline. The colour varies from a white or cream, through grey or green to black. They are usually softer than quartz, but harder than limestone. A pure phosphatic rock will not show effervescence on the addition of hydrochloric acid, but as many of these contain carbonate of lime this effect may be produced even on good rocks to some even slight extent.

Among the Farmers.

THE ASSOCIATIONS DURING THE MONTH.

DRONK VLEI.

A MEETING of the Dronk Vlei Farmers' Association was held at Creighton on Monday, 21st June. There were present the President, Secretary, and sixteen members. After some discussion of the E.C.F. regulations, it was decided to call a public meeting, under the auspices of the Association, on July 1st, to further consider the allotment of the Ixopo Division into words. Many members living on the western side of the Natal-Cape railway expressed their dissatisfaction with that portion of the Division being attached to Polela.

"We are still hoping," our correspondent says, "to persuade Government to give us a loading bank on the northern (east) side of the line to facilitate the trucking of mealies." A strong resolution was unanimously carried urging the necessity of constructing a bridge over the Inkonza River, on the main road. The want of such a bridge caused the death of several Natives last summer, and some Europeans had narrow escapes.

A question was raised by a correspondent as to price of mealies and quantities available for sale, but it was considered impossible to reply definitely until later. The advantages of joining the Mealie Growers' Union were discussed, and several members expressed their intention of joining. A resolution expressing approval of the Bills about to be brought forward to mitigate the Indian nuisance was moved, and, after a member had pointed out that the difference between the indentured coolie and the "Arab" trader should be clearly kept in view, was carried. The meeting was unanimous in considering that the *Government Gazette* should be supplied free to Presidents, in order that Associations might be kept informed officially of the latest E.C.F. regulations and other important matters. The Secretary was instructed to convey the thanks of the Association to the East London Association for a very valuable letter on the use of Cooper's dip and salt for stock.

EAST COAST FEVER.

Under the auspices of the Dronk Vlei Farmers' Association, a largely on the south side of the line wished to be included in the Ixopo Magisterial Division was held in the Library, Creighton, on the 1st July, to discuss matters connected with Advisory Boards and boundaries under E.C.F. regulations. Capt. Perceval, President of the Association, was in the chair. The principal business was to ascertain the state of local feeling about the present fever boundary—the N.-C. Line and fences in

continuation thereof to the Umzimkulu River. Some of the farmers on the south side of this line wished to be included in the Division for E.C.F. purposes, instead of being, as now, attached to Polela. Farmers on the other side of the line had, however, strong arguments against this, and though the southerners urged that under existing arrangements there was nothing to prevent cattle travelling on one man's pass from Deepdale or thereabouts to Riverside, the motion "That the boundary remain as at present" was carried by a large majority. It was pointed out that it would be more satisfactory if the Polela authorities could see their way to adopt the ward system, and thus help to raise a northern barrier against the disease, but Messrs. Comrie and H. Cole, who were present, explained that it was impossible to do this under the conditions obtaining in that Division.

After a two hours' sitting, the meeting terminated with the usual compliment to the chair.

LOTENI.

The annual meeting of the Loteni Farmers' Association was held on the 12th July, at which the following gentlemen were present, viz.:—Messrs. J. A. Tod (President), J. W. McLean (Vice-President), T. Carter, C. W. Brooke, J.P., C. McLean, W. Root, H. McLean, W. McLean, C. C. Laurens, R. W. Booth, and A. Kennedy Stone (Hon. Secretary).

After the minutes of the previous meeting had been read and confirmed, the President read his annual report, as follows:—

"Gentlemen,—In placing before you this, the first annual report, I would premise it by reminding you that we are barely established yet as an association, and therefore can hardly expect to have accomplished much. It is, nevertheless, satisfactory to find that there is a fixed determination on the part of the Association to place this district on an equal footing with other progressive districts of the Colony.

"During the year, four meetings have been held; also two public meetings under the auspices of this Association.

"It is needless for me to recapitulate all the various business transacted during the year, such being duly recorded in the minutes before you.

THE PAST YEAR.

"The past year, I regret to say, has not been a good one to the stock-farmer. The East Coast Fever prevailing in many parts of the Colony has been productive of so many quarantine restrictions as to make a market for cattle impossible, and from present indication it will, I fear, be a long time before the embargo is removed.

"Sheep-farming may be a possible salvation, and it is a pleasure to know that this district has again been fortunate in securing good prices for its wool.

"The sheep-farmer should carefully guard the good reputation the

district has secured for this commodity. The Home buyers' comments periodically appearing in the *Natal Witness* show that clean and carefully baled clips are always sure of a good market.

"Apart from indifferent sorting, shreds of string and sacking mixed with the wool immediately condemn it in the manufacture of high grade goods, even when existing to a seemingly trifling extent, and I would suggest that all wool sacks be first thoroughly shaken, and the seams even singed so as to reduce to a minimum the risk of damaging the clip.

"Although during the past season the district has been free from the disease of horsesickness, the horse-breeder at present finds a poor demand for horses.

"Altogether the several adverse circumstances mentioned, combined with the disastrous effects of the hailstorms, have not conduced to make the farmers lot a happier one.

THE FUTURE.

"Unfortunately it is not only from the farmer's point of view that the outlook to-day is black, all classes, except perhaps lawyers and auctioneers, who appear to be thriving, are feeling the effects of the bad times.

"We can only fight on, and trust that the tide will turn shortly, and that those in charge of the government of the country and its coffers, may have learnt a lesson, and in future not be so ready to squander millions in palatial offices and the like, to the neglect of trade and industry.

CLOSER UNION.

"I trust, gentlemen, you will not think me guilty of digression; the scope of a farmers' association, to me, appears to include the welfare of the Colony as a whole, contingent as that welfare must be with the pastoral prosperity of the Colony.

"The great question of Closer Union will in all probability shortly be referred to the country, and it is our duty to make a study of the question so as to be able to vote intelligently when the matter comes on. An ounce of the farmers's solid good sense is worth a pound of lawyer's glib argument, although we do suffer so many of the latter class to prominently interfere in the guidance or misguidance of the country's affairs. East Coast Fever matters have claimed a considerable amount of attention and time.

EAST COAST FEVER.

"I accompanied Mr. Boik in an interview with the Minister of Agriculture, with a view to fully acquainting him of our position, brought about by the attitude assumed by the Lion's River people. We received from Mr. Deane his assurance of fair treatment, and correspondence from his Department I now lay on the table.

"Depending as we do on account of the nature of the roads upon ox wagons as our only means of transport, it is the bounden duty of the

Government to see that the handful of farmers near Nottingham Road Station are not allowed to arrogate to themselves the right of closing that outlet, the only one we have, to rail.

"The Minister of Agriculture did not appear to be overawed by the importance and bullying tactics of the N.W. Lion's River Advisory Board, and he will, I feel sure, see to it that coterie does not, against all ethics of reason and justice, domineer a district greatly outnumbering them.

"The latest scheme devised by that Advisory Board for deriving revenue is to charge a fee of 5s. for every permit countersigned by them. Such a fee is, I believe, illegal, and it is certainly unjust, and I am anxious to know whether the Government is to allow the imposition to continue.

"For the purpose of enlisting the assistance of our Parliamentary representatives, Mr. Bcik and I called upon Col. E. M. Greene, who accompanied us and was present during part of our interview with the Minister of Agriculture.

"Our opinion of the gallant Col. Greene, however, is that he showed himself entirely antagonistic to our having a voice in any movement of cattle on the Nottingham Road, near his precious imported bull, and he considered we should repose full trust in the Nottingham Road Advisory Board. And he showed considerable acerbity because we could not accept his interested view of the position.

"Subsequent events prove, unfortunately, that our interests receive little consideration in that quarter.

"An Advisory Board has now been formed to control the movement of cattle in this district, and I think our thanks are due to the people of Boston and Impendhle for so readily recognising and meeting our requirements in the matter.

"I think we all in this district are well aware as to who is pulling the string at the end of which the N.W. Lion's River Advisory Board is dancing. We have, however, partly to blame ourselves for assisting in placing the string-puller in the position he at present occupies, a position which has enabled him to work such havoc here and elsewhere.

"At the recent Conference called to formulate a plan of campaign with regard to East Coast Fever, it was clearly stipulated that every district should have access to rail; later developments, I am sorry to say, reveal a desire in some quarters to deny to this district such facility, and indicate that the inceptor and prime mover of that Conference had only his own selfish interests at heart.

"Although reluctant to suggest that this Association enter into discussion of political affairs, I am convinced that the political weapon is the one to use if we are to secure our ights.

"On behalf of this Association, I wrote to our members asking whether they could make it convenient to pay the district a visit, as we

were desirous of placing before them certain facts, and of obtaining their views regarding important measures likely to be dealt in during the present session of Parliament. Their time, unfortunately, did not permit of this, Parliament meeting the following week.

“Mr. Smythe wrote, saying that he could always be found at the Assembly any time on Tuesdays, Wednesdays or Thursdays, should any Loteni farmer wish to see him on any particular matter.

ROADS AND OUTSPANS.

“Our request to Government for the provision of the legal outspans on the Nottingham-Inzinga Road has not been acceded to. The omission of such outspans is distinctly a breach of the law, evidently winked at on account of the road passing through farms belonging to our Parliamentary representatives.

“The depleted state of the Treasury is the reason given by the Government for withholding the promised telephone, for the construction of which money was long since voted.

“The same reason is advanced for the neglect of our roads. Whilst recognising that the present financial state of the Colony requires the exercise of great discretion where expenditure is entailed, it seems altogether wrong that our just demands, where no money is concerned, should be shelved.

“During the year a number of Crown farms have been taken up in this district, and I hope we are soon to see these occupied by the owners, who would be a welcome addition to the number of residents.

“Gentlemen, there is a hard year’s work in front of us if we are to remove the many disabilities under which we are at present struggling. Let us laugh at our little troubles, and meet the great ones half way, and always hold in contempt the bully and intimidator, and we are bound to progress.

“I ask you for a vote of thanks to Mr. Carter for so kindly placing this room at our disposal for meetings during the past year.

“It is now necessary for you to elect officers for the coming year, and to arrange our future place of meeting.

“I cannot conclude without an expression of thanks to our genial and competent secretary, Mr. Stone, for his help, and to yourselves, gentlemen, for the kindly consideration you have so readily extended to me at all times.

“I now beg to relinquish the Presidentship of the Association, by the conferring of which you honoured me.”

Before the conclusion of the meeting the Secretary was instructed to take the necessary steps to have the Association affiliated to the Natal Agricultural Union.

LADYSMITH.

ANNUAL SHOW.

The annual show of the Klip River Agricultural Society was held in Ladysmith on the 3rd July, in ideal weather.

East Coast Fever, of course, exercised an adverse influence upon the show, especially on account of the stoppage of the movement of cattle throughout the Division and the consequent difficulties which had to be contended with in the matter of transport; nevertheless the result of the Society's efforts was the more readily appreciated when it was realised that it was only finally decided some six weeks previously to hold a show.

As a result of transport difficulties some hundreds of entries were lost, more particularly in the pig, sheep, goat, produce and cereal sections; but, in spite of this, the grand total of entries was 50 in excess of last year's show, being a few short of 800. There were notable increases in the horses and manufactures sections. There were approximately 250 horse entries in all, representing about 150 animals.

The most successful exhibitors at the show were Messrs. T. H. Hindle, who scored 121 points altogether, and John G. Bester, whose entries were awarded 111 points. In this connection, two prizes were presented: the first, value £5 5s., by Messrs. Merrick & Co., of Maritzburg; and the second (value £2 2s.), by Messrs. Illing Bros., of Ladysmith.

IXOPO.

ANNUAL SHOW.

On the 4th July the Ixopo Agricultural Society held their annual show. The weather conditions were all that could be desired, and as a result there was a large attendance. The exhibits in all classes were excellent, and were indicative of the increasing prosperity of the Ixopo Division. The sheep and horses were exceptionally good, and would have held their own at any show in the country. In the pig section all the prizes with the exception of one were secured by Messrs. E. Y. Peel and G. C. Way. Messrs. Archibald & Co. were awarded the special prize presented by Messrs. J. Raw & Co., Maritzburg, for the most points in the produce section; and they also secured Messrs. Dunn & Co.'s special prize for most points obtained with grain exhibits, beans and peas included. The special prize presented by Mr. Jas. Ross (to be won twice, not necessarily in succession) for most points in the home produce section, was won by Mr. A. M. Greer; whilst Mr. T. M. Foster secured Messrs. Steel, Murray & Co.'s special prize for most points in butter classes.

MID-ILLOVO.

The monthly meeting of the Mid-Illovo Farmers' Club was held at Fairview Hotel, Mid-Illovo Central, on the 11th inst. Mr. L. G. Wingfield-Stratford (Chairman) presided over a fair attendance.

The minutes of the previous meeting having been read and confirmed, the Chairman moved, and the Vice-Chairman (Mr. B. B. Evans) seconded, the following resolution, which was carried unanimously:—"That the deep sympathy of the Club be conveyed to Mrs. Andrew Aitken, in the loss of her husband, a foundation member of the Farmers' Club."

The Hon. Secretary read letters from the Minister of Agriculture (*re* dipping tank), the Hon. Treasurer, and Mr. E. H. Dudley, and also made a statement in connection with the East Coast Fever fund, Mid-Illovo sub-area. At the last meeting of the Club, the Hon. Secretary (Mr. J. W. V. Montgomery) was requested to write to residents, asking them to contribute towards expenses in connection with the delegates' visit to the City, and as the East Coast Fever Board exists for the good of the whole community, it was thought that no difficulty would be experienced. The Hon. Secretary has received 35s., with a promise of a further 15s., but there are still some residents who not only have not subscribed, but, by representing the fund as a Farmers' Club matter, have prevented others contributing. On the other hand, several residents were not only willing but expressed surprise at the smallness of the amount (2s. 6d.) asked for.

Mr. A. L. Wingfield moved, and Mr. W. A. McCullough seconded, the following motion:—"That the Club tender its thanks to those who have already subscribed towards the local East Coast Fever Committee fund, and trusts that other residents may see their way to sending in the small amount asked for, seeing that the Committee was elected by the public of these parts, and whose support they expect."

The Hon. Secretary was instructed to communicate with the members for the Division, asking them to do all in their power to expedite the building of the Mid-Illovo railway, and to ask in the House that the report of the Railway Advisory Board on the Mid-Illovo railway be placed on the table.

It was decided that, as the present arrangements were satisfactory, the dipping tank would not be taken over by the Farmers' Club.

The next meeting of the Club will be held on Saturday, August 8th.

It is the cow with the big appetite and small udder which makes the farmer believe that dairying does not pay.

Exchange Reviews.

WHAT OTHERS ARE THINKING AND DOING.

THE July number of the *Cape Agricultural Journal* contains several papers of interest and importance. The first article is a discussion by Mr. Chas. P. Lounsbury, the Government Entomologist, of the *Fusicladium* diseases of the pear and apple, with notes on other spot diseases of these fruits. The article deals with two fungus diseases, one of the apple tree (*Fusicladium dendriticum*, which is a stage in the development of *Venturia pomi* [inaequalis], found in decaying apple leaves), and the other of the pear tree and its fruit (*F. pyrinum*, which is a stage in the development of *V. pyrina*), which diseases are stated to be of growing importance in the Cape Colony. Describing the appearances of the diseases, the damage which they cause, the conditions which favour their rapid spread, and their occurrence in Cape Colony, Mr. Lounsbury proceeds to enumerate the varieties of pear and apple which are affected, and concludes with a useful and extended discussion of remedial measures.

The first instalment of a study of the agricultural soils of Cape Colony, by Dr. C. F. Juritz, M.A., F.I.C., appears in the same issue of the *Journal*. These studies will doubtless be valued by all progressive agriculturists of the Old Colony. Mr. R. W. Thornton, Agriculturist Assistant, contributes a short sketch dealing with some of the more important, desirable and undesirable, bushes of the Karroo, their feeding values as compared with cultivated crops, and the disabilities under which they are expected to flourish and maintain their present standing without assistance or the least care being taken to prevent their entire extirpation. The destruction and ousting of the more desirable Karroo bushes from the veld is due to several reasons, chief of which, Mr. Thornton points out, is overstocking, more especially during severe droughts. This destruction of the good bushes gives rise, among other things, to the multifarious sluits carrying off silt-laden water, the essence of the noted fertility of the Karroo.

For some time past agriculture has been making rapid strides in the British East Africa Protectorate, and material evidence of the interest which is being taken in agriculture and of the efforts which are being made to further its scientific development, is now before us in the form of the first part of the quarterly *Agricultural Journal* of B.E. Africa. We should state, however, that the East African and Horticultural Society had for some time past issued a journal devoted to agriculture, commerce,

geography, and other subjects of interest relating to East Africa and Uganda, but it was felt that the time had come when the publication of this journal might cease and the Government might be asked to follow the lead of other British Colonies and issue a journal devoted exclusively to the interests of agriculture. The new quarterly *Journal* is the outcome.

The first issue attains a high standard, and contains several interesting papers, among which may be mentioned one on Sisal Hemp by the chief of the economic plant division (Mr. H. Powell), a paper on Pleuropneumonia by the Acting Chief Veterinary Surgeon (Mr. F. Brandt), an article on Sheep Breeding in East Africa by the manager of the Government Stock Farm (Mr. J. K. Hill)—to mention the most important. The *Journal* is destined to play an important part in the agricultural development of British East Africa, and we wish it every success in its efforts in that direction.

From British East Africa to India is not a very great step, and from the latter country we have before us three journals this month. Two of these are published in the interests of forestry—the second part of the newly-instituted *Indian Forest Records*, and the June number of the *Indian Forester*. The whole of the former publication is occupied with “A Preliminary Note on the Development of the Sal in Volume and in Money Value,” by A. M. F. Caccia, M.V.O., F.Z.S., I.F.S. In this paper the author brings together the statistical data at present available regarding the development of Sal trees and woods in volume and money value. He points out that a correct knowledge of the laws which govern the development of single trees and whole woods forms the foundation of economic forest management, adding that the statistical data upon which these laws are based enable the forester to fix the age at which woods should be exploited in order to yield the greatest return in produce or in money, or the highest interest on the money invested, and that in addition they supply precise figures clearly indicating the manner in which certain silvicultural operations should be carried out in order to obtain the best results. Mr. Caccia’s paper will be found of considerable value not only by Indian foresters, but also by workers in other parts of the world as an example of the manner in which statistical data can be made to throw light upon certain problems of forest management. We cannot end this notice without a reference to the illustration of “Fire Protected Sal Forest through which Improvement Fellings have Passed—United Provinces,” which forms the frontispiece of Mr. Caccia’s paper. This is a beautifully executed collotype, and adds considerably to the appearance of an already well got up journal.

The principal paper in the June number of the *Indian Forester* is a discussion by Mr. B. O. Coventry, the Deputy Conservator of Forests,

Punjab, on the "Alternation (Rotation) of Forest Crops." Two papers follow on Forest Fires—one by Mr. H. C. Walker on "Fire Protection in Burma," and the second on "Railway Fires," by Mr. H. Jackson.

The third periodical from India is the *Quarterly Journal* of the Bengal Department of Agriculture for April. This journal is keeping well up to the standard set in its first issue, and the subjects which it covers in its some seventy pages are as varied as ever. Papers on flax, lucerne, and durum or macaroni wheat are followed by articles on manuring, vegetable culture, fruit culture, arboriculture, sericulture, live stock, dairying, together with notes on such miscellaneous subjects as the manufacture of date sugar, the sunflower industry, the agricultural education of the peasant, methods of packing limes; and the *Journal* also includes illustrations of cattle on various Government farms.

Camels in Australia.

The success which has attended the use and breeding of camels in Australia, although pursued to only a comparatively limited extent, has attracted attention in other parts of the world. So encouraging have been the results of camel breeding in South and Western Australia that there seems a possibility of the industry developing into an export trade to Asiatic countries, which are the original habitat of the camel, but where serious deterioration has become apparent. An article in the June number of the *Journal* of the Western Australian Department of Agriculture discusses the possibilities of such an export trade being developed, in view of enquiries received from official quarters in India. The article contains a considerable amount of information regarding Australian experiences with the use of camels and should serve to stimulate interest in the industry.

Milo as a Dry Land Crop.

The value of the sorghum known as milo as a grain crop for dry districts is discussed in Farmers' Bulletin 322 of the U.S. Department of Agriculture. Milo, it may be stated, is one of the durra group of sorghums, closely related to white durra ("Jerusalem Corn") and to brown durra. It was first known as "Yellow Millo Maize," but many other names have since been applied to it, among them being "Branching Durra," "Dwarf Milo," "Dwarf Milo Maize," "Dwarf Yellow Milo," "Millo," "Millo Maize," "Milo Maize," "Red Egyptian Corn," "Rural Branching Sorghum," "Yellow Branching Dhoura," "Yellow Branching Millo Maize," "Yellow Branching Sorghum," "Yellow Millo Maize," "Yellow Milo," and "Yellow Milo Maize." "Dwarf Milo," "Yellow Milo," and "Milo 'maize'" are the names most commonly used for milo.

Milo is at present the most successful summer crop for the southern half of the Plains Region of the United States; and is stated to be an earlier and more drought resistant crop than maize, and makes a satisfactory feeding substitute. It is noted that the highest average yield of mealies under the same conditions have been ten bushels to the acre less than those of milo. The yields of blackhull Kalir corn have been five bushels to the acre. Milo is now a staple crop in a large part of Western Texas and in the adjacent portions of New Mexico, Colorado, Kansas, and Oklahoma. This section lies at elevations of 1,500 and 4,000 feet above sea level, and has a varying annual rainfall of 17 to 25 inches. It is stated that milo is not adapted to humid regions.

The soil requirements of milo are stated to be much the same as those of mealies. The land is ploughed preferably in autumn and well prepared in spring time to hold moisture and destroy weeds. In general, milo is sown three weeks later than maize and after all danger from frost is past. It can be listed or sown at the surface as local conditions require. From 4 to 6 pounds is the seeding recommended to the acre; and the rows should be about three and a half apart and the stalks about 6 to 8 inches apart in the row. Cultivation is essentially the same as that for maize. Milo is used mostly as a feeding grain on the farm. It is fed as thrashed grain, in the head or in the bundle.

Fertilisers for Cotton.

An experiment in the fertilising of cotton is described in the Annual Report for 1907 of the Florida Agricultural Experiment Station. The standard application per acre used in this experiment consisted of 200 lbs. of acid phosphate, 150 lbs. of cotton seed meal, and 50 lbs. of muriate of potash. The plot receiving this application produced at the rate of 465 lbs. of seed cotton per acre, while the plot receiving no fertilisers produced at the rate of 122½ lbs. A plot receiving one and a half times the standard formula yielded at the rate of 615 lbs. of seed cotton per acre, but when the standard amount was doubled the yield was not quite so good as with 600 lbs. The author believes that from 400 to 600 lbs. per acre of a good complete fertiliser is the most profitable quantity to apply, and that the results have shown that the practice of applying 100 to 200 lbs. of a one-sided fertiliser to cotton in Florida is poor economy.—*Exp. Sta. Rec.*

Tick Investigations in U.S.A.

A useful bulletin has been issued by the Bureau of Entomology of the U.S. Department of Agriculture from the pen of the Assistant Entomologist (Mr. Nathan Banks), entitled "A Revision of the *Ixodoidea*, or Ticks, of the United States." This constitutes the first technical revision of the United States species, and thus forms an important

contribution to entomological literature. Say described a few species of *Ixodoidea* in 1821, Packard several more in 1869, and Fitch in 1871. Koch, in 1844, described a host of ticks from all over the world, naturally including a few from the United States. The late Dr. George Marx was much interested in this family of mites and intended to monograph it, or at least the United States species. In 1896 Dr. George Neuman, of Toulouse, France, began the publication of a Revision of the *Ixodidae*. He attempted to monograph the ticks of the entire world, a task which in 1896 doubtless seemed quite possible, and the Revision was completed in four parts. Mr. Banks divides the group of United States ticks into two families, viz., *Argasidae* and *Ixodidae*. In the former family he notes the occurrence of two genera: *Argas*, containing 3 species, and *Ornithodoros*, comprising 4 species; in the latter family there are 7 genera, containing in all 35 species. The genera *Dermacentor* and *Ixodes* are the most widely represented, the former with thirteen and the latter with twelve species. Descriptions are given of the various species, which are for the most part represented by plates.

Correspondence.

NATAL SEED MEALIES.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—In the March number of the *Journal* you publish a photo of Rhodesian mealies which the grower claims to be of extraordinary size.

I have seen a cob of these mealies which a friend of mine got from Mr. Cookson, Rhodesia, and for which he asks 1s. each in Rhodesia. I consider we can do quite as good with the mealies we grow here in Natal at present, and by same post I send you a few cobs which quite equal the Rhodesian mealies. The two cobs of large white mealies are not picked ones, and they are grown by Mr. H. W. Meyer, P.O., Wartburg, while the cob of Hickory King which I send you is an average cob which I picked myself in a standing field of Mr. I. Pfothner's, P.O., Fawn Leas, and I have no doubt that you would find a good many cobs of a larger size in that same field.

If we require good seed mealies we can get all we want in Natal, and have to spare, at a price, I think, which is more reasonable than that which is asked for in Rhodesia.—Yours, etc., FRITZ REICHE.

[The three cobs referred to by Mr. Reiche were duly received. They are excellent specimens, and if they are representative samples they speak well for the class of mealies grown in Mr. Reiche's district.]

Gardening Notes for August.

By W. J. BELL, Nurseryman, Florist and Seedsman, Maritzburg.

KITCHEN GARDEN.

MAKE further sowings of Peas for succession, if required. Full crops may be sown of Asparagus, Cabbage, Carrot, Beet, Globe Artichoke, Lettuce, Radish, Turnip, Leek, Onion, and in the warmer districts where late frosts are not to be feared, Tomato, Marrow, Cucumber, Squash, Capsicum, Melons, and Egg-plant. In the colder districts these should be first raised in tins or boxes by means of a hot bed and frame for planting out the following month.

Transplant Onions from the seed beds sown in the autumn. Plant the sets in drills about 9 or 12 inches apart and about 6 inches apart in the drills. In hard, stiff soils it is a good plan to plant the sets in small ridges, so that when the plants are well established the soil may be drawn away from the bulb, leaving it exposed, with the roots only in the ground. A deep, rich loamy soil is the best for this crop, with the addition of lime or wood ash.

The month of August in the midlands is the best time to sow Rhubarb seed. If sown later the young plants do not get sufficient start before the wet weather sets in and are very liable to damp off. The bed should be well raised and edged with tiles or stones as a protection from flooding rains. Rake the surface fine and level and sow the seed evenly and not too thickly, and cover with a thin layer of fine soil; bat down with the back of the spade, and then cover the bed with litter of some kind, half decayed leaves or straw. This must be left in till the young seedlings show through and then be gradually thinned off as the plants become stronger. Care must be taken not to overwater the bed. These seedlings will produce strong roots for planting out the following spring. The best varieties are Myat's Victoria and Champagne.

Dwarf Beans.—Sowings may be made at regular intervals for succession from August till February.

Plant Jerusalem Artichokes, Asparagus and Rhubarb roots. Rhubarb requires a deep rich soil, well worked and manured well away from overhanging branches of trees. Land sloping towards the south and protected from the north by high ground is the best aspect for this crop.

The planting of deciduous fruit trees should be completed this month if possible, also Grape Vines, Raspberries, Walnuts, Spanish Chestnuts, Filberts, etc.

FLOWER GARDEN.

Hardy Annuals may still be sown from the midlands upwards, such

as Pansy, Phlox; Candytuft, Petunia, Mignonette, Coreopsis, Calendula, Larkspur, Gaillardia, Dianthus, Cornflower, etc. Nearer the coast the more tender varieties may be sown, such as Balsam, Nasturtium, Portulaca, Zinnia, Cockscomb, Dahlia, Datura, Amaranthus, etc., including tender climbers, such as *Mina lobata*, Clitoria and Tacsonia; also the various varieties of Ipomea, such as Mexican and Bona Nox, both having very large pure white flowers, the latter blooming at night; Ipomea Quamoclit or Cypress Vine, small star-shaped flowers in scarlet and white; also the double and single Morning Glories. These beautiful climbing annuals are of a very rapid and luxuriant growth. The flowers will come double, semi-double, and single. The colours vary; there are various shades of blue, white spotted with red, white marbled with purple and lavender, crimson, pure white, etc.

All kinds of perennial border plants should now be planted, such as *Phlox decussata*, Pentstemons, Pinks, Carnations, Cannas, Rudbeckias, Japanese Anemones, Cornflower-Asters, Coreopsis, Gaillardias, Heliotropes, Gladioli, Tube-rose, and the various kinds of Amaryllis and Lily bulbs. In planting Lilioms, those having scaly bulbs, the proper depth is of great importance. Many amateurs plant them too shallow. A safe depth is not less than four times the depth of the bulb; should the bulb be two inches high, then the base of the bulbs should be eight inches from the surface of the soil.

Some Lilies have only roots at the base of the bulb, others have base roots and stalk roots. The stalk roots are the main support of the plants, so that every encouragement should be given to these; while the roots from the base are working in the interest of the bulb, the stalk roots are working in the interest of the flowers, consequently a top dressing of light rich compost will materially assist this class of bulb.

Agricultural Conditions in June.

THE WEATHER, CROPS, AND LIVE STOCK.

A PAUCITY of detail, interesting or otherwise, is a noticeable characteristic in our correspondents' reports for the month of June; but this feature is somewhat in keeping with the general conception of winter as the season of inactivity. We can, as a matter of fact, hardly expect more than a report of the few farm operations which occupy generally the major portion of the winter season. The harvesting of the mealie crop is the principal operation noted during the month; and it is probably on

account of the call made upon the farmer's time by this activity to which is due the shortened number of reports that have come to hand in respect of the month under review.

Taking into consideration the fact that June is always a more or less dry month, we have been most fortunate in having had so many good rains. With the exception of a few of the Midland districts, the rainfall appears to have been excellent during the month all over the Colony. Frosts have been slight except in a few districts—Greytown and Nqutu, our reports show, where our correspondents refer to a few severe attacks, causing considerable damage to the crops, especially to mealies. Snow has been in evidence in a few of the northern districts, but little damage has been caused by it.

With few exceptions, our reports testify to the unusual mildness of the winter so far as it has progressed this year. In consequence of the absence of any very great degree of frost—speaking of the Colony as a whole—and the occurrence of beneficial rains over large areas, stock are looking well for the time of the year. The comparative excellence of the pasture is, of course, largely accountable for the maintenance of the condition of stock. So rapid, indeed, has been the growth made by the grass on autumn burns in some districts that sheep have had to be removed from it. Sheep from overberg, we note, are looking particularly well.

In many districts there is very little difference noticeable in the general tone of reports regarding the mealie crop as contained in the previous month. Whatever change there is, however, is generally for the better; and from other districts come reports of still further improved conditions. Two months ago we estimated that the probable crop would be approximately 800,000 muids. In making our final estimate we have been able to add 50,000 muids to our previous estimate as a result of the improvement in the condition of the crop which has taken place. Fuller remarks upon this subject will be found amongst our "Notes and Comments" in this issue.

According to the June reports the potato crop was not as good as it might have been. Nearly all our correspondents have reported it as "fair," while in parts of the Lower Umzimkulu, Umgeni, and Umvoti districts and Zululand the crop has been reported as "poor." From all the wattle-growing districts the reports on the crop have been good and some of them "excellent." In most districts winter crops have been doing well.

The live stock market continues in its usual stagnant state. Prices of eggs and poultry have been mostly good, and the same applies to milk and butter.

The Markets.

SOUTH AFRICAN AND OVERSEA NOTES AND PRICES.

THE prices of live stock and animal and vegetable produce, realised on the principal South African markets during the month of June-July, averaged as under.

NATAL.

Up to the time of going to press the Maritzburg report had not been received.

DURBAN.

The Market Master reports the following average prices realised during the month ended 15th July:—

Live Stock and Animal Produce.—Sucking pigs, 5s; fowls, 1s 4d; ducks, 2s; turkeys, 5s; guinea fowls, 3s; rabbits, 9d; bacon, 6d per lb; eggs, 1s 2d per dozen; honey, 6d per lb; lard, 5d per lb; beef, 3d per lb; mutton, 4½d per lb; butter, 1s 4d per lb.

Vegetable Produce.—Amadumbe, 4s per muid; earth nuts, 7s 6d per muid; mealies, 10s per muid; potatoes, 9s per muid; sweet potatoes, 3s per muid; bananas, 8d per 100; oranges, 1s 4d per 100; naartjes, 1s 8d per 100.

CAPE COLONY.

The following information has been compiled from the last available report of the Cape Superintendent of Agricultural Co-operation (for the week ended 11th July):—

It is to be regretted that no cheery note can be introduced into market conditions during the past week. Advices from Australia indicate a big drop in the price of oats, and it is urged in commercial circles that quotations here must recede in sympathy if business is to be done. The principal holders of large lots of oathay in the Cape Peninsula intend desisting rather than make sacrifices at ruinous prices. It is anticipated that prices will remain steady.

Bran is slightly easier, the demand being more readily supplied. Latest price from the coast is 6s. 3d. c.i.f.

Transvaal and Orange River Colony mealies, white flat or yellow flat, are anxiously looked for for the export trade, but present quotations are somewhat too high to influence buying. Mealies in Natal remain unchanged.

Lucerne hay in strong demand, and no stocks.

Colonial wheat has had an easier market, only comparatively small sales having taken place.

Australian Wheat.—Sales have been effected this week at 165s. 2d. per 2,240 lb. c.i.f., with steady demand.

Potatoes.—Early Rose and Up-to-date seed strongly inquired for, but no local supplies offering.

The following prices are quoted:—

Live Stock and Animal Produce.

Fowls: small 10d to 1s 6d, medium 1s 8d to 2s 2d, large 2s 6d to 3s; ducks, 2s 9d to 3s 9d; turkeys: cocks 5s to 10s 6d, hens 4s to 6s; geese, 2s 9d to 4s 6d. Poultry in good supply and demand strong.

Eggs, per 100: good (not fresh) 10s to 11s 6d, fresh 13s to 14s: good demand; butter (best): wholesale 1s 6d, retail 1s 9d to 1s 10d; Colonial Cheddar cheese (best), 1s 3d to 1s 4d retail.

Vegetable Produce.

Colonial wheat, per 200 lbs: Caledon, 19s 6d to 20s; Malmesbury, 20s. to 20s 1½d; Moorreesburg, 20s to 20s 1½d; Porterville-road, 20s to 20s 6d.

Colonial oats, per 150 lbs: Caledon, 7s 9d to 8s; Moorreesburg, 8s to 8s 3d; Malmesbury, 8s 6d to 9s; Main Line, 8s 10d to 9s.

Colonial barley, per 150 lbs: Moorreesburg, 8s to 8s 6d; Main Line, 8s 6d to 9s; Caledon, 8s to 8s 3d.

Bran, per 100 lbs: 6s 6d to 6s 9d.

Colonial rye, per 200 lbs: 14s to 14s 3d, country stations.

Kafir corn, per 200 lbs: 14s 6d to 15s, delivered buyer's store.

Mealies, per 200 lbs, *ex* stores, Capetown: Natal yellows, 14s 6d to 15s; Orange River Colony small yellows, 14s 9d to 15s; Natal white coast, 12s 6d to 12s 9d.

Colonial oathay, per 100 lbs: Main Line stations, 2s 11d to 3s; Malmesbury, 2s 10d to 2s 11d; Moorreesburg, 2s 10d to 2s 11d.

Colonial fodder, per 100 lbs: 4s 3d to 4s 6d, *ex* stores, Capetown.

Colonial compressed chaff, per 100 lbs: 1s 7d to 1s 8d Main Line stations; 1s 6d to 1s 7d, Moorreesburg and Malmesbury.

Vegetables and Fruit.—Potatoes: supply large, but extra fine quality scarce and in strong demand: firsts 15s to 17s 6d, seconds 13s 6d to 14s; onions: firsts 15s to 16s, second 12s to 13s 6d; beans 27s 6d to 36s (good supply); limes, 2s 6d to 5s per bushel basket; bananas, per box of 800 to 1,000: ordinary 10s 6d to 14s 6d, choicest 15s to 18s; pineapples, 6s to 25s per 100; oranges, per 100: small 10d to 1s 6d, medium 1s 8d to 2s 3d, large 3s 6d to 4s 6d; naartjes, 1s to 4s 6d per 100.

KIMBERLEY.

Messrs. Jas. Lawrence & Co., Ltd., report as follows relative to the Kimberley market:—

Mealies remain unchanged, but there is a better demand for yellows; Kafir corn, good white inquired for. Meal and bran firm. Forage and

oats easier, owing to the uncertainty regarding exportation. Potatoes firm. Sound dry onions have had slight advance in value. Fair demand for fresh eggs. Best quality butter finds ready sale. Fair supplies of poultry arriving. Market overstocked with oranges and naartjes. Pumpkins inquired for. Fresh vegetables plentiful. Game fetching low prices. Little doing in live stock market. The following prices are quoted:

Live Stock.—Oxen (good), prime, 600 lbs upwards, £7 to £10; cows (good), 450 lbs upwards, £5 to £8; calves, 4d per lb dead weight; pigs, 100 lbs (clean), 2d to 3d per lb live weight; lambs, 50 lbs, 8s to 10s; hamels, 40 lbs to 45 lbs, 10s to 13s 6d; Cape sheep (good), 10s to 13s 6d; oxen, trek, £6 to £7; riding horses, £10 to £25; draught horses, £10 to £22 10s; mares, £9 to £20; fowls, 1s to 1s 9d; ducks, 1s 9d to 2s 6d; turkeys, 3s to 6s; hares, 6d to 1s 9d.

Animal Produce.—Butter: fresh 1s 4d to 1s 6d, second quality 1s to 1s 2d; eggs, 1s 3d to 1s 6d per dozen.

Vegetable Produce.—Bran, 8s to 9s per bag 100 lbs; barley, 7s 6d to 10s per bag of 163 lbs; beans, per bag of 203 lbs: sugar 30s to 35s, Kafir 15s to 20s; chaff: per bale 4s 6d to 9s 6d, pressed 3s to 3s 9d per 100 lbs; forage, per 100 lbs: good 4s 6d to 5s, inferior 3s to 4s; Kafir corn: mixed 8s 9d to 9s 6d, white 9s to 10s; Boer meal: unsifted 23s 6d to 25s 6d, sifted 26s to 29s; flour (South African), 15s 6d to 16s 6d per bag 100 lbs; mealies, per 203 lbs: yellow 8s 9d to 9s 6d, mixed 8s 9d to 9s 6d, mealie meal (white), 10s to 11s per 183 lbs; oats, 9s 6d to 11s 6d per bag 150 lbs; lucerne hay, 4s 6d to 5s 6d per bag 100 lbs; onions, 15s 6d to 18s per bag 120 lbs; potatoes, 9s to 17s per bag 163 lbs; tobacco, per lb: good 4d to 7d, inferior 1d; wheat, 17s 6d to 20s per bag 203 lbs; dried peaches, 2d to 4d per lb; dried apricots, 2d to 4d per lb; oranges, 1s 6d to 4s 6d per 100.

ORANGE RIVER COLONY.

BLOEMFONTEIN.

The following prices were, according to the *Post*, realised on the Bloemfontein market on the 11th June:—

Live Stock and Animal Produce.—Fowls, 1s to 1s 6d; dressed fowls, 1s 6d to 2s each; ducks, 1s 6d to 1s 9d; geese, 3s to 3s 6d; turkeys, 2s 6d to 5s 6d; dressed turkeys, 3s to 5s each; hares, 1s to 1s 3d; mutton: per hind quarter 3s to 4s 6d, per fore quarter 2s 6d to 3s; pork, 4d to 6d per lb; beef, 4d to 6d per lb; butter, 1s 3d to 1s 9d per lb.

Vegetable Produce.—Oat hay, 4s to 5s per 100 lbs; chaff, 4s to 6s per bale; Kafir corn chaff, 2s 9d to 3s per bale; Kafir corn (grain), 10s to 10s 6d per bag; mealies, 9s to 10s 6d per bag; barley, 6s to 7s per bag; bran, 7s 6d to 7s 9d per bag; seed oats, 9s to 10s per bag; onions, 15s to 16s per bag; potatoes, 10s to 12s 6d per bag; pineapples, 1s 6d to 2s 6d per dozen.

 TRANSSVAAL.

JOHANNESBURG.

Mr. Alfred Webb, produce agent to the Cape Government, P.O. Box 2342, reports the following prices realised on the Johannesburg market during the week ended 14th July:—

Live Stock.—There is a very great demand for first-class prime slaughter stock, especially sheep. Prices:—Oxen (slaughter), £8 10s to £13; oxen (dressed), £1 9s 6d to £1 12s 6d per 100 lbs; pigs, live, 3d to 4d per lb; sheep (hamels), 14s to 23s; sheep (dressed), 4½d to 5d per lb; Boer goats, 12s to 20s; donkeys, £6 to £7 10s; fowls, 1s to 3s 3d; geese, 5s; turkeys: cocks 5s to 14s 6d, hens 3s to 5s; ducks, 1s 11d to 2s 8d.

Animal Produce.—Eggs: new laid 1s 6d to 2s, fresh 1s 3d to 1s 9d; butter, 1s 2d to 1s 5d per lb.

Vegetable Produce.—Lucerne is still very scarce. Mealies are advancing. Onions fetch high prices for best quality, but all prices this week have been affected by the wet weather. Strawberry contracts can be placed: growers are invited to correspond. Prices:—Bran, 8s to 8s 3d per 100 lbs; barley, 8s 3d per 100 lbs; beans (dry), 16s 6d to 18s 6d per 200 lbs; Boer meal, 27s per 200 lbs; chaff, 2s 3d per 100 lbs; forage, 3s 3d to 4s 3d per 100 lbs; Kafir corn, 8s 9d to 10s 9d per 200 lbs; lucerne (dry), 5s to 8s per 100 lbs; manna, 3s 3d to 3s 9d per 100 lbs; mealies: white 9s to 9s 3d, yellow 9s 6d to 10s; onions, 19s 6d to 21s per 120 lbs; oats (seed), 6s 9d to 7s 9d per 150 lbs; peas (dry), 12s per 200 lbs; potatoes, per 150 lbs: best 12s 6d to 15s, medium 8s to 11s 6d; sweet potatoes, 5s to 6s 6d per 120 lbs; bananas, 1s 6d to 3s per 100; lemons, 1s 6d to 3s per 100; naartjes, 1s 3d to 4s per 100; oranges, 2s to 3s 6d per 160; pines, 1s 6d to 2s 6d per dozen.

 OVERSEA MAIZE MARKET.

During the early part of June the quiet nature of the maize market in England which obtained during May continued. As the month advanced there was a slight improvement, but during the week ended 26th June—the latest date up to which we have advices—mealies were decidedly quieter and the number of transactions reported in cargoes was very small.

During the week ended 12th June, *Beerbohm's List* reports, 24s 3d was paid to cancel an April-May steamer of La Plata, 23s 6d for a cargo-June shipment, and the same price for a cargo loading. European maize had met with very little demand. Parcels for shipment to London were paid for at the rate of 23s 6d c.i.f. for May-June and 23s 3d for June-July shipment. Odessa (half old) afloat, however, was offered in vain at 25s c.i.f.

During the following week there was a decided advance in prices,.

with a better demand, especially for near cargoes, which appreciated in value to the extent of 6d to 9d per quarter. Continental as well as United Kingdom buyers were in evidence; and there is little doubt that the scarcity of stocks almost everywhere in importing countries has been making itself felt. So great has been the scarcity in some English centres—London especially—that oats have had to be largely substituted. In the meanwhile, shipments have improved of late, owing to a liberal output from Argentina. In Mark Lane, during the same week, there was a sharp rise, 24s 4½d c.i.f. being paid for La Plata parcels afloat or for May-June shipment, whilst Odessa on the spot sold up to 25s 9d per 480 lbs.

The next week, as already stated, the market was decidedly quieter. For early shipment La Plata cargoes were obtainable at 3d less money, whilst for distant shipments the decline was about 6d. In parcels business was done at prices which showed a general decline of fully 6d as compared with the previous week. On the 25th there was a steadier feeling.

The crop position in Roumania is reported to have greatly improved, owing to beneficial rains, and, to a less degree, also in Bessarabia. There was, however, a marked difference between the supplies of old crop obtainable in the middle of June and at the same time last year. Later on in the month general and heavy rains fell all over Roumania, so that the prospects of a good crop have still further improved.

In Hungary the crop prospects are favourable, but the market has ruled firm, supplies being small and the demand good.

Latest reports from the United States state that the crop is backward.

The general statistical position of maize on the 26th June was as follows:—

				1907-8—qrs.	1906-7—qrs.	1905-6—qrs.
On passage to U.K.	..	...		775,000	910,000	985,000
„ „ Cont.	...	...		1,210,000	1,290,000	1,100,000
				-----	-----	-----
Imports into U.K. for the 25 weeks ending						
June 20	...	..	...	3,529,400	5,334,900	5,247,900
				-----	-----	-----
Visible supply in U.S. (<i>Bradstreet's</i>)	...		...	667,300	1,863,200	1,287,800
				-----	-----	-----
American crop	...	...	...	295,000,000	340,000,000	316,000,000
				1908.	1907.	1906.
New York, Spot	...	...	...	76½c	63c	59½c
Mark Lane, Mixed Amer. landed	...		...	—	23/9	22 6

SHIPMENTS OF MAIZE TO EUROPE FROM JANUARY 1ST TO DATE.

	1908. U.K.*	1908. Cont.	1907. U.K.*	1907. Cont.	1906. U.K.*	1906. Cont.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
America	1,117,000	1,329,000	2,588,000	2,810,000	3,108,000	4,857,000
Argentine	1,558,000	1,468,000	944,000	638,000	2,118,000	1,545,000
Russia	371,000	659,000	849,000	1,135,000	75,000	129,000
Danube, etc. ...	944,000	1,474,000	1,064,000	1,662,000	121,000	644,000
Total	3,990,000	4,930,000	5,445,000	6,245,000	5,350,000	7,175,000

* Includes shipments for orders.

MISCELLANEOUS COMMODITIES.

We are indebted to Messrs. S. Figgis & Co.'s *Monthly Price Current* of East India, Cape of Good Hope, China and Singapore produce, of the 25th June, for the following notes relative to the English market and ruling prices for such commodities as are likely to interest readers of this *Journal*.

The prices of various commodities have so far, during 1908, run as follows:—

Aloes (Cape).—Fair dry to fine bright, 35s to 36s 6d; common and middling, 28s to 34s.

Arrowroot (Natal).—Middling to fine, 5d to 7d.

Bees' Wax (South African).—Fair to fine yellow, £7 5s to £7 15s.

Camphor (Fukien).—Crude, 140s to 150s.

Castor Oil (East India).—Firsts, white, 4d to 4½d; seconds, fair to good pale, 3¾d to 4d.

Chillies.—Zanzibar, fair to good bright, 20s to 25s; Mombasa, fair, 20s to 25s; Nyassa, fair to good bright, 25s to 55s; China, etc., ordinary to fine bright small, 30s to 55s.

Cinnamon (East India).—Firsts and seconds, ordinary to fine pale quill, 7½d to 1s 7d; thirds and fourths, ordinary to fine pale quill, 6d to 1s 3d; chips, fair to fine plant, 2½d to 3d.

Ginger (Cochin).—Cut, good to fine bold, 70s to 80s; cut, small and medium, 40s to 60s; rough, fair to fine bold, 36s to 40s; small and medium, 33s to 36s. Bengal ginger: rough, fair and good, 30s to 35s.

Indigo.—Bengal: middling to fine violet, 3s 4d to 3s 10d; ordinary to middling, 2s 10d to 3s 2d. Kurpah indigo: fair to good reddish violet, 2s to 2s 6d; ordinary and middling, 1s 6d to 1s 10d. Madras indigo (dry leaf): middling to good, 1s 6d to 2s; low to ordinary, 1s 2d to 1s 4d.

Myrabolams.—Bombay: prices range, according to grades, from 3s 6d to 7s. Madras (Upper Godavery): 3s 6d to 5s 6d. Coast: 4s to 4s 6d.

Turmeric.—Bengal: leanish to fine plump finger, 18s to 23s. Mad-

ras: finger ordinary to fine bright, 20s to 23s; bulbs, 10s to 14s. Cochin: finger, 18s to 22s; split bulbs, 10s to 15s. China: finger, 15s to 20s.

JUNE REPORT.

Messrs. Figgis & Co. report as follows on produce from the East and the Cape for the month of June. General business continued quiet:—

Aloes (Cape).—In larger supply, hard bright brought full prices, soft and coarse rather lower. 151 packages offered and 145 sold—Mossel Bay, hard bright 35s 6d to 36s 6d, part soft and slightly coarse 33s to 34s 6d, soft and coarse 30s to 31s 6d, very coarse soft 28s to 28s 6d, mixed with dirt 25s 6d; Algoa Bay, hard bright 35s, slightly softish 33s 6d, soft and drossy broken 25s to 29s.

Beeswax (Cape).—Six packages sold at high prices—bright palish £1 7s 6d to £7 10s.

Camphor.—Lower, and sales of China down to 135s c.i.f., closing rather firmer in the absence of sellers. Japan refined slabs have been in more demand and sales up to 1s 8½d; tablets quiet at 1s 8d per lb.

Chillies.—Quiet. Sellers of Mombasa at 23s 6d on spot. To arrive buyers at 21s 6d c.i.f. New York, sellers 23s, but no business done.

Indigo.—At the second quarterly auctions of the year held 13th April, the larger supply of 775 chests was offered, and 230 sold. Good quality mostly withdrawn, but what sold brought full prices. Middling grades steady, but commoner kinds, which were in large supply, were rather cheaper.

Ostrich Feathers.—There was a fairly large quantity catalogued for the auctions 1st inst., the weight being 89,160 lbs, against 104,300 lbs in April and 68,650 lbs in June last year. There was a good attendance of buyers, and a fair general demand, but prices for many articles were in buyer's favour. America did not take so large a proportion as in April, but Austria and France were large buyers. The finest wing feathers did not maintain the extreme rates of last sales, while all Black were much wanted and dearer. Whites—Finest long declined 10 per cent., but seconds and tiptlets sold fairly steady, especially medium sizes. Femina—Best qualities were 10 to 15 per cent. cheaper, other kinds showed little change. Grey and dark Femina was rather dearer. Byocks were rather cheaper. Spadones were 10 per cent. cheaper, common lots even more. Boos weak, except for Femina which were dearer. Blacks in active demand, and all kinds advanced 10 to 15 per cent., and sometimes more. Drab of good quality sold firmly. Floss firm. 4,378 cases (including 204 cases of Egyptian feathers) were catalogued for these auctions and all sold. Value sold about £200,000. Next sales July 27th.

Coal and Labour Return.

Return of Coal raised and Labour employed at the Natal Collieries for the month of June, 1908 :—

Name of Colliery.	Average Labour Employed.									Output.	
	Above Ground.			Below Ground.			Unproductive Work.*			Tons. Cwt.	
	E.	N.	I.	E.	N.	I.	E.	N.	I.		
Natal Navigation ..	37	98	248	24	321	230	3	7	1	26,023	0
Elandslaagte ..	18	16	245	16	211	431	2	36	8	12,974	1
Durban Navigation ..	25	131	37	10	364	52	—	—	—	12,104	0
Dundee Coal Co. ..	24	19	233	14	169	324	2	3	32	10,848	15
Glencoe (Natal)†	4	27	63	21	927	85	53	305	187	10,780	2
South African ..	6	9	80	8	160	58	2	19	23	9,292	17
St. George's ..	18	135	68	11	370	185	—	—	—	8,712	7
Natal Cambrian ..	17	50	153	9	207	63	1	1	4	8 209	6
Newcastle ..	12	52	27	8	465	3	—	—	—	8,040	19
Ta ana (Natal) ..	6	57	27	6	216	64	1	5	—	5,554	1
Natal Steam Coal Co. ..	3	73	3	3	180	7	—	11	6	4,516	1
Ramsay ..	5	13	36	5	190	110	—	5	4	3,378	6
Central ..	5	47	12	5	242	74	—	—	—	3,122	5
West Lennoxton ..	45	3	65	1	29	98	—	—	—	2,538	4
Zululand ..	4	15	1	2	42	3	—	—	—	541	0
Hlobane ..	—	—	—	—	—	—	24	225	—	28	10
Vryheid§ ..	1	3	—	1	4	—	—	—	—	22	0
Wolfsdals ..	—	—	2	1	2	1	—	—	—	20	0
Dumbi Mountain†	2	2	—	—	—	—	—	—	—	8	0
Nooitgedacht ..	—	2	—	1	—	—	—	2	—	4	0
Totals ..	232	752	1,300	146	4,099	1,768	88	619	265	126,717	14
Corresponding month, '07	166	697	1,303	125	2,705	1,415	24	76	91	110,339	12

* Cost charged to Capital Account. § May return. ‡ Includes May return.

CHAS. J. GRAY,
Commissioner of Mines.

Mines Department, Maritzburg,
7th July, 1908.

Return of Coal bunkered and exported from the Port of Durban for the month of June, 1908 :—

	Tons.	Cwt.
Bunker Coal* ...	52,984	13
Exported to :—		
East London ...	1,346	8
Algoa Bay ...	5,248	15
Knysna ...	35	0
Cape Town ...	12,493	9
Lobito Bay ...	3	0
Beira ...	1,373	5
Mauritius ...	1,003	10
Tulcar ...	827	8
Colombo ...	5,544	6
Bombay ...	2,378	8
Total ...	83,238	2

* Including 700 tons 18 cwt. taken by H.M. Warships.

* Including 210 tons taken by Foreign Warships.

GEO. MAYSTON,
for Collector of Customs,

Customs House, Port Natal,
1st July, 1908.

Return of Farms at Present under Licence for Lungsickness and Scab.

STOCK INSPECTOR.	DISTRICT.	DISEASE.	OWNER.	FARM.
A. P. Crow ..	Ladysmith ..	Scab	H. N. Nel ..	Catharine
		"	J. van de Bosch ..	Ruther Glen
		"	A. J. Good ..	Mattwana's Hoek
		"	Messrs. Gray & Smith ..	Garthmore
		"	D. Spricks ..	Newlands
A. B. Koe ..	Portion of Estcourt	"	F. R. Moor ..	Greystones
		"	C. F. Schmidt ..	Enon
		"	M. Beyers ..	Reitfontein
		Lungsickness	A. N. Bennett ..	Winterton
		Scab	Vondabia ..	Kelv'n
A. J. Marshall ..	Dundee ..	Scab	F. R. Kelly ..	Winterton
		"	I. J. van Rooyen ..	Maybole
		"	J. Pieterse ..	
E. Varty ..	Western Umvoti ..	"	G. F. Kremer ..	Dalcy
		"	T. J. Nel ..	Mt. Ermistia
		"	J. P. van Rooyen ..	Underdunt
		"	J. F. van Rooyen ..	Selikhoeck
R. Landsberg ..	Krantzkop ..	Lungsickness	Maqamganse ..	Loots Hoek
		"	Uqupu ..	Myoniezwe's Locat'n
		"	Ndabane ..	
		"	S. Johnson & Co. ..	Inadie Store
		"	Ndabane ..	Myoniezwe's Locat'n
		"	Natives ..	Myoniezwe's Locat'n
		"	Amosi ..	
		"	Umbagaza ..	Keat's Drift
A. H. Ball ..	Weenen ..	Scab	Nyongas ..	Myoniezwe's Locat'n
		"	Mrs. A. Hair & Sons ..	Oribe Vlake
		"	L. C. Kinsman ..	Mt. Moriah
		"	Marley ..	Gretna Green
J. Stewart ..	Bergville ..	Lungsickness	Natives ..	Vrisgewaagd
		Scab	J. G. Fannin ..	Clommel
		"	W. Newton ..	Excelsior
		"	J. G. Taylor & Halett ..	Quagga's Hoek
		"	— de Norker ..	Sweetwaters
D. Williams ..	Utrecht ..	"	W. Groenwald ..	Utkmst
		"	Simon ..	Goedehoop
		"	F. P. Theron ..	Slackeld
		"	T. L. Botha ..	Wateval
		"	L. Page ..	Spitzkop
		"	R. Stappellerg ..	Krommelenboog
		"	Kaalkop ..	Utricht
		"	G. J. v. Schalkwijk ..	Weltevreden
H. Van Rooyen ..	Ba'anango ..	"	Mhorne ..	Paardeplaats
		"	Mduyemba ..	Onvergeeneg
J. G. Speirs ..	Impend'he ..	"	Pinda, Vete & Sobuon ..	Furth
A. Brown ..	Polela & Underberg	"	Natives ..	Location No. 1.
		"	F. A. Hathorn ..	Sangwana
L. Trenor ..	Alfred ..	Lungsickness	Hitchins Bros. ..	Thleku
		Scab	Sulwana ..	Location
		"	Yalwayo ..	
		"	Dumas ..	Location
A. S. Parkinson ..	Lions River ..	Lungsickness	M'Nyango ..	Thluku
		Scab	A. C. Thomson ..	Lion's Bush
		"	C. Strapp ..	Oatlands
		"	Wm. Adams ..	Adamshurst
R. Mayne ..	Eastern Umvoti ..	"	L. J. Nel ..	Weggedund
		"	L. L. Nel ..	Muresdal
		"	J. T. Morton ..	oph adale
C. T. Vaug' an ..	Paulpietersburg ..	"	C. & G. de Kleik ..	Morgenzon
		"	G. Hohls ..	Onderdom
		"	P. J. P. v. Rooyen ..	Halberton
		"	P. Lauschagne ..	Rooipoort
		"	G. C. Viljoen ..	Makateskop
		"	P. A. len ..	Welvedien
		"	G. van der Penter ..	Bedrog
		"	J. M. Louvrens ..	Pivaan's Poort
		"	S. C. van Rooyen ..	Geuk
R. Wingfield Stratford	Newcastle ..	"	P. B. Uys ..	Valschfontein
		"	W. Steel ..	Botha's Pass
		"	S. W. Reynolds ..	Bank
		"	Osborne & Vernon ..	Roo.pynt

RETURN OF FARMS UNDER LICENCE (*Continued*).

STOCK INSPECTOR.	DISTRICT.	DISEASE.	OWNER.	FARM.
J. Button	Portion of Estcourt	Lungsickness	Various	Weston Commonage
		Scab	C. B. Lloyd ..	Hidcote
		"	J. Phipps ..	Littl-cote
A. Hair	City and Umgeni ..	"	W. E. Oates ..	Oatsdale
		"	R. J. P. Otto ..	Otto's Bluff
G. Daniell	Vryheid	"	Umgoba ..	Edendale
		"	H. and J. Volker ..	Apologie
		"	Sifana ..	Dubblerecht
		"	H. Liebetran ..	Vr de
		"	Nxanala ..	Welgevonden
J. R. Cooper ..	Nkandhla & Nqutu	"	Mpenzani ..	Vaalkop
J. F. van Rensburg	Ngotshe	"	Leyo & J. Mboye ..	Mapaswane
		"	Segudwe ..	Smalldeel
		"	H. van der Venter ..	Landeman's D.ift

MANGE IN HORSES EXISTS AS UNDER.

Owner.	District.	Owner.	District.
Pinda, Vete & Sobuon ..	Impendhle	Prætorious, H. ..	Upper Umkomanzi

Pound Notices.

NOTIFICATION is contained in the *Government Gazette* of the sale, unless previously released, of the undermentioned live stock on the dates specified :—

ON THE 5TH AUGUST.

Ladysmith.—Young boar pig, black, four white feet; value about 15s.

Weenen.—Black sow, half grown, long snout, very low in condition.

ON THE 12TH AUGUST.

Bulwer.—Cream entire, 3 years old, black points, slight star, about 14 hands unbroken; probable value, £14 10s.; impounded on 23rd June by A. R. Holmes, Hill Top, Polela; claimed by a native who did not prove ownership.

Meran (Washbank).—Dark brown kafir sheep, ran, no visible brands or distinctive marks; impounded by a native, and reported by him to have been running for some months at Elandslaagte.

ON THE 19TH AUGUST.

Greytown.—Big black ox, no brand, long horns, about 8 years old; left ear half moon, and slit in half moon, right ear split; probable value, £7.

Meran (Washbank).—Black kafir sheep, ewe; no visible brands or distinctive marks; impounded by a native, and reported by him to have been running for some months at Elandslaagte.

Solferino (Gourton).—Two-year-old white bull, with little red on both ears; probable value, £2 10s.; impounded on July 2nd, by Jim (Native), residing at Empangweni Mission Station, Ennersdale. Unable to be driven to the pound owing to East Coast fever restrictions.

Vryheid.—(1) Gelding, brown, about 15 hands, shod on fore feet; no brands.
(2) Mule, mare, mouse colour, white saddle marks on back, aged; no district brands.

ON THE 2ND SEPTEMBER.

Finchley (Ixopo Division).—Spotted sow pig.

Middledale (Klip River Division).—(1) Four Merino ewes, marked right hip C—. (2) Three Merino lambs, no marks. (3) Brown and white bastard hamel, no marks.
Nqutu.—Two pigs (young): one small boar, one large sow: both all black; no marks or brands.

Solferino.—Black ewe goat, end of right ear cut off, and piece of right ear cut out of back; with ewe kid, black.

Utrecht.—(1) Bay mare mule, 14 hands, branded broad arrow near hip, aged.
(2) Dark brown mare mule, 13 hands, no marks or brands, aged 6 years.

Meteorological Returns.

Meteorological Observations taken at Government Stations for Month of June, 1908.

STATIONS.	TEMPERATURE (IN FAHR. DEGS.).				RAINFALL (IN INCHES).						
	Means for Month.		Maximum for Month.	Minimum for Month.	Total for Month.	No. of Days.	Heavy'strain-fall in 1 day.		Total for Year from July 1st, 1907.	Total for same per'd from July 1st, 1906.	
	Maximum	Minimum					Fall.	Day.			
Observatory ..	73.0	65.6	77.6	49.2	.52	4	.47	5th	45.57	41.37	
Stanger ..	74.3	55.2	81	48	.75	8	.67	5th	46.89	39.86	
Verulam ..	76.3	52.0	81	45	.38	3	.30	5th	42.33	42.24	
Greytown ..	66.4	35.8	82	26	.32	5	.28	10th	41.33	37.29	
Newcastle ..	74.7	40.6	83	29	.22	3	.20	10th	41.68	58.60	
Estcourt ..	68.9	34.5	78	28	.12	1	.12	21st	29.14	30.66	
Bulwer ..	—	—	—	—	.26	6	.13	6th	48.41	—	
Mid-Illovo ..	70.3	48.9	81	43	.26	4	.11	29th	42.69	44.42	
Krantzkloof ..	70.0	53.3	81	47	—	—	—	—	—	—	
Port Shepstone ..	76.7	49.6	82	45	1.08	2	.73	29th	46.90	30.62	
Richmond ..	69.6	42.8	81	34	.24	5	.09	5th	42.49	51.88	
Maritzburg ..	72.7	42.0	85	34	.13	5	.08	10th	36.16	53.05	
Howick ..	67.6	37.0	80	29	.18	2	.12	10th	38.80	43.83	
Dundee ..	66.5	43.9	70	40	.12	1	.12	21st	13.27	37.61	
Weenen Gaol ..	75.4	34.4	84	27	.18	2	.16	20th	29.82	30.85	
Krantzkop ..	67.3	34.8	76	30	.27	5	.14	22nd	—	—	
Impendhle ..	63.4	36.0	76	29	.17	7	.06	20th	42.35	46.72	
New Hanover ..	70.0	39.5	83	32	.39	3	.35	10th	42.83	56.80	
Charlestown ..	65.9	36.5	71	25	.86	3	.85	21st	31.31	53.46	
Camperdown ..	76.6	46.2	88	41	Nil	—	—	—	29.41	39.84	
Vryheid ..	74.6	46.5	84	37	.79	2	.60	7th	38.18	36.85	
Mtunzini ..	79.5	51.5	88	38	1.37	4	.70	5th	54.94	—	
Hlabisa ..	75.4	56.6	86	52	1.19	10	.43	5th	34.22	44.93	
Melmoth ..	70.1	49.9	83	45	.31	3	.16	10th	28.20	38.81	
Ubonbo ..	73.4	54.7	83	49	.33	2	.30	7th	35.19	49.51	
Point ..	—	—	—	—	.51	4	.44	5 h	55.60	43.22	
Ingwavuma ..	73.3	53.7	85	48	1.18	5	.58	17th	31.70	—	
Empangeni ..	76.9	52.2	85	45	1.04	2	1.00	6th	46.16	—	
Imbizana ..	—	—	—	—	.59	5	.24	6th	49.04	—	

Meteorological Observations taken at Private Stations for Month of June, 1908.

STATIONS.	TEMPERATURE (IN FAHR. DEGS.)		RAINFALL (IN INCHES).						
	Minimum for Month.	Maximum for Month.	Total for Month.	No. of Days.	Heaviest rain-fall in 1 day.		Total for Year from 1st July, 1907.	Total for same period from July 1906.	
					Fall.	Day.			
Adamshurst (Wm. Adams) ..	86	31	0.15	3	0.09	10th	—	—	
Hilton.. ..	81	32	0.19	2	0.13	10th	37.48	—	
Ottawa	—	—	0.39	3	0.25	6th	42.86	43.56	
Mount Edgecombe	—	—	0.25	1	—	—	12.55	49.16	
Cornubia	—	—	0.31	—	—	—	40.04	51.13	
Milkwood Kraal	—	—	0.21	—	—	—	25.18	37.88	
Blackburn	—	—	0.30	—	—	—	34.04	42.54	
Saccarine	—	—	0.22	—	—	—	35.99	43.55	
Umlangeni	—	56	1.05	6	0.27	29th	—	—	
Equeefa (W. Hawksworth) ..	84	51	0.12	5	0.22	5th	42.26	48.91	
Uzinto, Beneva	—	—	0.38	2	0.34	5th	52.99	50.57	
Bransholme	—	—	0.41	3	0.36	10th	66.47	—	
Cedara—Hill Station	80	32	0.15	3	0.06	18th	—	—	
Cedara—Vlei Station	79.5	24	0.18	3	0.09	10th	32.71	—	
Winkel Spruit.. ..	77	50	0.65	4	0.50	5th	48.84	45.11	
Weenen	80	30	—	—	—	—	—	—	
Giant's Castle	63.2	37.9	0.52	4	0.37	10th	30.92	49.5	

Brands Allotted to Infected Magisterial Divisions.

The following is a list of the brands which have been allotted to the several infected Magisterial Divisions: Durban County, D. 2; Alexandra County, A. 2; Lower Tugela, T. 2; Mapumulo, S. 2; Inanda, B. 2; Umsinga, U. 2; Dundee, X. 2; Vryheid, V. 2; Ngotshe, H. 2; Paulpietersburg, P. 2; Nongoma, G. 2; Mahlabatini, L. 2; Ndwedwe, N. 2; Weenen County, W. 2; Umvoti, F. 2; Hlabisa, K. 2; Eshowe, E. 2; Ladysmith, R. 2; Babanango, O. 2; Ladysmith, East of Line outside infected area, R 3; Utrecht, Z. 2; Krantzkop, 2 K; Umvoti Location, 2 F; Ladysmith, West of main line of Railway, R 3 on left neck; Pietermaritzburg City, 2 P; Umlazi Location (Upper Umkomanzi portion), 2 U; Umgeni Division, west of line, J 2; Lions River, east of line, 2. H.

Employment Bureau.

THE Department of Agriculture has received applications from the undermentioned, who are prepared to become assistants or apprentices on farms. The Department will be glad to hear from farmers willing to take young men as assistants, and to place them in correspondence with the various applicants. When communicating on the subject, farmers may refer to the applicants by quoting the numbers in the following list:—

109a.—Scotchman, 39 years of age, producing good references from his previous employers, desires to obtain on a farm light work, such as bookkeeping, superintending despatch of produce, &c.

No. 110a.—Englishman, 39 years of age, gardener by profession, with knowledge of farming, desires employment on a farm. Appears to be a steady and reliable man.

No. 111a.—Married man, 36, no children, desires managership of farm. Spent five years with Capt Hayes, and is well acquainted with the management of horses, including racing horses. States he has sound veterinary knowledge and understands dairy, poultry, pig, and stock farming generally. South African experience, four years Cape Colony and one year Impendhle Division, Natal. Is prepared to work for month or two for board and lodging to prove capabilities, provided sound opening at end of that time.

No. 1.2a.—Young man, single, desires employment on farm. Two years' experience of mixed farming in Uderberg and Lions River Divisions. Small salary required, with board and lodging.

Farmers requiring good, steady farm hands would do well to communicate with Ensign Anderson, of the Salvation Army Shelter, Maritzburg, who constantly has good men at the Shelter who would be glad of employment at reasonable rates. Ensign Anderson pledges himself not to recommend for employment any but those he is satisfied will give satisfaction to their employers. He will be pleased to enter into correspondence with any farmer who may address him on the subject.

Both the razor-back cow and the razor-back hog are "good things" to dispose of. The sooner the better. A small tester will indicate the razor-backs,

Executives of Farmers' Associations.

ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION.—President: Wm. Thompson. Hon. Vice-Presidents: A. Blamey, E. W. Hawksworth, Thos. Kirkman, H. Bazley, J. L. Knight, R.M. Hon. Secretary and Treasurer: Geo. Lamont. Hon. Auditor: W. B. Brunner. Committee: W. Arnott, H. G. Arbuthnot, R. C. Archibald, J. R. G. Archibald, J. Bazley, A. Behrman, W. Cocks, G. J. Crookes, R. Cruickshank, H. D. Hawksworth, H. E. Hawksworth, A. F. W. Hawksworth, R. C. Hawksworth, J. Landers, D. McAndrew, F. Nelson, C. A. Preston, Dr. Rouillard, W. A. Gilbert, Fred Blamey, Rev. B. M. Ford, S. C. Hawksworth, J. C. Landers, S. F. Crookes, J. J. Crookes, R. A. Lindsay, J. A. Curle, F. B. Preston, R. Parkin, H. Reynolds, J. B. Stewart, C. Taylor, H. H. P. Waller, J. Ross, Rev. W. C. Wilcox, Dr. W. P. Tritton.

ALFRED COUNTY FARMERS' ASSOCIATION.—President: A. G. Prentice, J.P. Vice-Presidents: C. Knox, J.P., L. T. Trenor, and C. A. Holwell. Hon. Secretary and Treasurer: H. C. Hitchens. Committee: C. M. Etheridge, R. Fann, J.P., V. Hitchens, S. Aitchison, J.P., W. B. Rethman, Dr. Case, J.P., H. Rethman, R. G. Mack, J. Hogg.

BOSTON FARMERS' ASSOCIATION.—President: Thomas Fleming. Vice-President: H. Phipson. Hon. Secretary and Treasurer, W. J. Fly, J.P.

CAMPERDOWN AGRICULTURAL SOCIETY.—President: John Moon, J.P. Vice-Presidents: J. Gavin and John W. Harvey, J.P. Hon. Secretary: W. E. Allsopp.

CAMPERDOWN AND DISTRICT FARMERS' ASSOCIATION.—President: John Moon, J.P. Vice-President: F. N. Meyer. Hon. Sec.: J. Baker. Committee: H. Parker, J. Gavin, J. W. Harvey, J.P., W. B. Turner, H. H. Hutton, C. Baker, H. E. Meyer.

DUNDEE AGRICULTURAL SOCIETY.—President: F. Turton, J.P. Vice-Presidents: The Minister of Agriculture, the Mayor of Dundee, Messrs. A. L. Jansen, H. Wiltshire, and T. P. Smith. Hon. Secretary and Treasurer: J. McKenzie. Committee: D. C. Pieters, D. Macphail, M. Taylor, A. W. Smallie, W. Craig, C. G. Willson, D. G. Smith, A. Grice, W. J. H. Muller, E. G. Wobnitz, G. M. de Waal, B. J. Humann, W. H. Doidge, E. Retallack, H. Ryley, H. J. Head, A. S. Pieters, R. R. Mortimer, C. Vermaak, A. E. Norman, W. V. Marshall, H. P. Handley, J. Dyson, T. J. Harvey.

DURBAN COUNTY FARMERS' ASSOCIATION.—Patron: J. H. Colenbrander. President: J. McIntosh. Vice-Presidents: H. Westermeyer, R. R. McDonald. Committee: F. R. W. Boehmer, G. Compton, H. Freese, W. Freese, W. Gillitt, H. W. Königkrämer, H. W. Nichols, F. Schaefermann. Hon. Sec. and Treasurer: Frank J. Volck.

ESHOWE DISTRICT FARMERS' ASSOCIATION.—President: J. R. Pennefather. Vice-President: C. F. Adams. Secretary: T. Parkins. Treasurer: W. T. Brockwell.

GOURTON FARMERS' ASSOCIATION.—President: W. C. Stockil, Esq., J.P. Vice-President: M. Sandison, Esq. Hon. Secretary and Treasurer: Frederick B. Burnard, Esq.

HATTING SPRUIT FARMERS' ASSOCIATION.—President: J. Campbell, Vice-President: A. W. Smallie. Hon. Secretary and Treasurer: R. J. Hearn. Committee: G. Queddon, T. P. Smith, W. A. Helmer, Thos. Brookes, N. Glutz, Wm. Craig, W. R. Quedon, J. A. Brookes, W. T. Heslop, Thos. Dewar, F. Turton, W. H. Tatham, A. E. Norman, D. P. Campbell.

HIMEVILLE AGRICULTURAL SOCIETY.—President: Henry C. Gold, Dartford, Polela. Vice-Presidents: W. Little, F. E. Peto, G. Malcolm. Hon. Sec. and Treasurer: G. Palframan, Watermead, Polela. Executive Committee: G. Malcolm, W. S. Johnston, P. McKenzie, W. Little, G. Royston. Yard Steward: H. Brown. Auditors: T. C. Dearlove and T. E. Marriott.

HOWICK FARMERS' ASSOCIATION.—Chairman, Thos. Morton; Vice-Chairman, M. A. Sutton; Hon. Secretary and Treasurer, A. Clark.

INGCO FARMERS ASSOCIATION.—President: Angus Wood, J.P. Vice-Presidents: G. A. Fimstone and J. Browning. Hon. Secretary and Treasurer: G. Watt.

IXOPO AGRICULTURAL SOCIETY.—President: F. L. Thring, J.P. Vice-Presidents: Col. W. Arnott, B.M.R., W. K. Anderson, J.P., C. E. Hancock, J.P. Committee: John Anderson, Thos. Allen, J. C. Auld, H. D. Archibald, F. S. Benningfield, S. Boyd, T. L. Clarence, F. E. Foxon, R.M., Wm. Foster, Jas. T. Foster, O. C. Foster, Geo. E. Francis, L. Gray, A. M. Greer, J.P., J. R. Greer, Wm. Gold, H. A. Hill, C. F. Harris, A. E. Keith, R. Kennedy, Geo. Martin, W. Oakes, L. J. Phipps, T. F. Remfry, J. W. Robinson, Jas. Schofield, M.L.A., D. C. Smail, A. Stone, W. R. Way, A. B. Walker, M.L.A., P. D. Webb. Hon. Sec.: G. C. Way. Hon. Ass. Sec.: A. G. Harris. Hon. Treasurer: T. Arnott.

IXOPO FARMERS' ASSOCIATION.—President: A. E. L. Keith, Ixopo. Vice-Presidents: Geo. Martin, Claybrooke, Ixopo; A. Kirkman, Lufafa, Ixopo. Hon. Secretary and Treasurer: Geo. E. Francis, Morningview, Ixopo. Delegates to Farmers' Union: President and James Foster. Committee: F. Remfry, R. Vause, C. E. Hancock, John Anderson, R. Greer, W. Oakes, D. Campbell, G. C. Way, James Foster.

KLIP RIVER AGRICULTURAL SOCIETY.—President: Daniel Bester, worth, J.P. Vice-Presidents: W. Pepworth, J. G. Bester, Wm. A. Illing. Secretary and Treasurer: Edward V. Bambrick (Box 90, Ladysmith). Executive Committee: A. Brink, J. Farquhar, C.M.G., M.L.A., W. C. Hattingsh, J. G. Hyde, Trev. Hyde, A. L. Horsley, W. Freer, L. A. Leonard, H. Nicholson, H. C. Thornhill, Herman Illing, D. Munger, P. de Waal, J. H. Newton, D. Sparks, J.P., J. T. Francis, A. W. (Gus) Illing, G. Pinkney, W. Cochrane, George L. Coventry, and *ex officio* officers.

KRANTZKOP FARMERS' ASSOCIATION.—President: Capt. M. Landsberg. Vice-President: P. R. Vermaak. Hon. Sec. and Treasurer: Dr. L. L. Proksch. Committee: C. J. van Rooyen (Albany), C. J. van Rooyen (Wentfontein), Philip Nel, J. A. G. Mare, L. M. G. van Rooyen, J. C. Martens.

LION'S RIVER DIVISION AGRICULTURAL SOCIETY.—President: Graham Hutchinson. Vice-President: H. Nisbet; Executive Committee: H. Nisbet, M. A. Sutton, A. J. Holmes, J. Humphries, Jno. Pole, and W. A. Lawton; Auditor: W. J. R. Harvard; Hon. Sec. and Treasurer: Arthur F. Dicks, P.O. Box 1, Howick.

LITTLE TUGELA FARMERS' ASSOCIATION.—President: F. van de Waal. Vice-President: F. G. King. Secretary and Treasurer: H. L. Frances. Auditor: A. D. Buchanan. Committee: R. P. Summersgill, F. W. Holmes, J. P. Wepenaar, J. J. Harding, Max Cameron.

LOTENI FARMERS' ASSOCIATION.—President: J. A. Tod. Vice-President: T. Carter. Hon. Secretary: A. Kennedy Stone.

LOWER TUGELA DIVISION ASSOCIATION.—President: W. R. Hindson, Vice-President: A. E. Fess. Hon. Secretary and Treasurer: H. Curtis Smith (Stanger). Committee: A. S. L. Hulett, F. Addison, G. Stewart, T. G. Coenbrander.

LOWER UMZIMKULU AGRICULTURAL ASSOCIATION.—President: D. C. Aiken, J.P. Vice-Presidents: H. Albers and C. H. Mitchell, J.P. Hon. Secretary and Treasurer: W. J. Plows. Committee: C. Manning, J. W. Aiken, W. G. Camp, T. F. Godwin, J. Hutton, H. Norden and A. Borchard. Hon. Secretary, Show Committee: J. W. Aiken. Show Committee: A. E. Collison, A. Borchard, F. Knoop, A. Ringo, H. F. Voigts, J. Hutton, C. Manning, A. J. Lugg and H. Albers. Hon. Auditor: J. W. Aiken.

MID-ILLOVO FARMERS' CLUB.—Chairman: L. G. Wingfield-Stratford, J.P. Vice-Chairman: B. B. Evans. Hon. Secretary: J. W. V. Montgomery. Assistant Hon. Secretary: S. C. Phipson. Hon. Treasurer: Jos. McCullough.

MOOI RIVER FARMERS' ASSOCIATION.—President: R. Garland; Vice-President: C. B. Lloyd; Hon. Treasurer: H. A. Rohde; Collector: Capt. W. H. Stevenson; Auditor: Claude Scott; Hon. Secretary: H. B. Hall.

MUDEN AGRICULTURAL ASSOCIATION.—President: Thos. Thresh. Vice-Presidents: Wm. Lilje, E. A. Grantham. Secretary and Treasurer: C. A. Selling. Committee: Otto Rotther, Karl Lilje, Karl Rotter, Herman Schafer, Fritz Forlage, T. Braithwaite, Ernest Rotther, C. H. Tilbrook, Rev. H. Rotther (Hon. Life Member).

NEWCASTLE.—President: F. A. R. Johnstone, J.P. Vice-President: C. Earl, J.P., Mayor of Newcastle; Angus Wood, J.P., Ingogo; O. Schwikkard, C.M.G., Newcastle. Secretary: Wm. Beardall. Treasurer: Ed. Nicols. Executive Committee: L. H. S. Jones, E. Phillips, H. C. Caldecott, C. Watson, G. Langley, W. A. Lang, W. J. P. Adendorff, J. E. de Wet, O. Davis, S. W. Reynolds, B. Pettigrew, G. W. Thomas, G. H. Bishop, H. R. Muir, M. C. Adendorff, W. Napier, P. Van Breda, Chriss Botha, G. Templer.

NEW HANOVER AGRICULTURAL ASSOCIATION.—President: G. C. Mackenzie. Vice-Presidents: J. C. Watt, J.P., and R. H. Oellermann. Life

Member: C. A. S. Yonge, M.L.A. Secretary and Treasurer: W. D. Stewart, New Hanover. Auditor: J. H. F. Hohls. Committee: W. N. Angus, E. Bentley, W. W. Bentley, Edward Boast, E. E. Comins, G. R. Comins, C. Crookes, jun., H. Dinkelmänn, J. Duval, W. Fortmann, Dr. C. H. Herbert, J. Hillermann, J. H. F. Hohls, H. Jacobson, H. A. Light, G. C. Mackenzie, A. F. Mackenzie, T. M. Mackenzie, J. Muirhead, J.P., Oswald Muirhead, G. Moe, J.P., J. Moe, O. Moe, C. Oellermann, F. Oellermann, C. J. Oellermann, W. Ortman, J. C. Otte, E. Peckham, J.P., J. A. Potterill, S. Peckham, C. M. Scott, Rev. J. Scott, Wm. Schröder, J.P., Owen Solomon, J. H. Smith, Riby Smith, F. Thöle, H. Vorwerk, H. F. Westbrook, W. H. Westbrook, C. Westbrook, T. Wolhuter.

NOODSBERG ROAD AGRICULTURAL ASSOCIATION.—President: Fritz Reiche, J.P.; Vice-Presidents: H. Mummbräuer, P. Rodehorst, W. Dralle, W. Wortmann; Committee: W. Bartels, F. Bosse, H. Brammer, A. J. Bruyns, H. Bruyns, Carl Dralle, H. Gebers, W. Gevers, J. H. Holley, jr, W. C. Holley, C. Hillermann, L. Koch, H. Köhler, F. E. Kuhn, M. Maister, H. Mereis, A. Meyer, H. Meyer-Estorf, H. W. Meyer, K. A. Meyer, H. Misselhorn, W. Misselhorn, K. Peters, I. Pfothenauer, G. Rabe, G. Reiche, Joh. Reiche, W. Rencken, H. Rosenbrock, H. Schmidt, K. Schmidt, Rev. Jas. Scott, K. Seele, F. J. Smith, J. Thies, W. Witthöft, P. Worthmann, A. Wortmann, F. Wortmann, H. Wortmann, Secretary: Paul Vietzen, P.O., Singletree; Hon. Treasurer: E. Beurlen.

NOTTINGHAM ROAD FARMERS' ASSOCIATION.—President: W. Henwood, J.P. Vice-President: J. King, J.P. Auditor: A. Mengens, Secretary and Treasurer: C. J. King, Nottingham Road.

PIETERMARITZBURGSCH BOEREN VEREENIGING.—President: D. P. Boshoff; Secretary: E. G. Jansen, 313, Loop Street, Maritzburg.

RICHMOND AGRICULTURAL SOCIETY—President: John Marwick. Vice-Presidents: W. P. Payn, A. W. Cooper, J. W. McKenzie and Chas. Nicholson. Honorary Treasurer: R. Nicholson. Hon. Secretary: Tom M'Crystal. Committee: J. W. T. Marwick, Evan Harries, R. A. McKenzie, F. O. Howes, H. M. Moyes, W. Comrie, Thos. Marwick, J. C. Nicholson, J. W. Flett and E. J. B. Ho king.

RICHMOND ROAD FARMERS' ASSOCIATION.—President: Thos Stead, J.P. Vice-President: W. Mapstone. Secretary and Treasurer: W. L. Stead, New Leeds, P.O. Committee: D. Malcolm, J. Mapstone, W. P. Payne, J. James, J. Sinclair, W. S. Crouch, H. B. Boyd, W. Middleton, W. Oldfield, T. E. Horwood.

ROYAL AGRICULTURAL SOCIETY OF NATAL.—President: Sir G. M. Sutton, K.C.M.G. Vice-Presidents: W. S. Crant, Jas. King, D. C. Dick, G. J. Macfarlane, C.M.G., O. Hosking, with His Worship the Mayor, *ex officio*. Secretaries, Treasurers and Collectors: Duff, Eadie & Co., 12, Timber Street, Pietermaritzburg. Yard Superintendent: H. J. Stirton. Auditor: G. V. Lambert. General Committee: T. J. Allison, W. H. Buchanan, F. G. Burchell, W. H. Cobley, P. H. Campbell, R. Comins, W. P. Gough, E. S. Goodwill, K. H. Hathorn, K.C., T. W. J. Hall, J. Hall, A. W. Herbert, L. Line, Col. Sir D. Mackenzie, K.C.M.G., Jas. Morton, Sir T. K. Murray, Jno. Moon, W. J. O'Brien, P. Otto, R. H. Pepworth, J. F. Potterill, A. Robinson, Rev. J. Scott, P. D. Simmons, H. Solomon, W. L. Stead, H. J. Stirton, Dr. Oddin Taylor, F. W. Jameson, S. J. Mason. Executive Committee: President, Vice-Presidents and W. J. O'Brien, A. W. Herbert, W. H. Cobley, K. H. Hathorn, K.C., and Col. E. M. Greene. Members appointed by Corporation: Councillors Ireland, Sanders and Hathorn.

SLANG RIVER (UTRECHT) FARMERS' ASSOCIATION.—Chairman: P. J. Kemp; Executive Committee: J. J. Uys, J. Z. Moolman, T. J. Botha, P. J. Viljoen, P. J. Kemp; Hon. Sec. and Treasurer, Thys Uys, Utrecht P.O.

UMVOTI AGRICULTURAL SOCIETY.—President: Major T. Menne. Vice-Presidents: Theunis J. Nel, M.L.A., W. J. Slatter, W. L'Estrange. Executive Committee: Tol Nel, A. Newmarch, W. Lilje, O. Rottcher, S. C. Van Rooyen, W. Newmarch, E. J. Van Rooyen, O. Norton, I. M. Nel, J. Browning. Managers of Show Yard: J. M. Handley and N. Hunter. Hon. Auditor: W. K. Ente. Secretary and Treasurer: W. H. Gibbs.

UMVOTI FARMERS' ASSOCIATION.—President: P. R. Botha (J.'s son). Vice-President: J. M. Handley. Secretary and Treasurer: G. E. Cadle (Box 6, Greytown). Auditor: J. M. Nel. Committee: W. J. Slatter, J. G. Nel, H. F. Torlage, R. J. Landsberg, A. Newmarch, P. H. van Rooyen, A. F. Handley.

UPPER BIGGARSBERG FARMERS' ASSOCIATION.—President: W. L. Oldacre. Vice-President: G. Langley. Hon. Secretary: W. F. B. Sutherland.

UTRECHT AGRICULTURAL SOCIETY.—Chairman: L. Viljoen; Vice-Chairman: B. H. Breytenbach; Members: I. Bierman, M. M. Knight, J. H.

Klopper, B. C. Hattingh, T. Botha, M. Gregory, P. L. Eys, H. P. Breytenbach; Secretary : G. J. Shawe.

UTRECHT BOEREN VEREENIGING.—President : D. J. A. van der Spuy
Secretary : G. J. Shawe, Utrecht.

VICTORIA COUNTY AGRICULTURAL SOCIETY.—President: Lieut.-Colonel F. Addison; Vice-Presidents: Sir Liege Hulett, Kt., M.L.A., W. J. Thompson, Esq., J.P., J. Polkinghorne, Esq., M.L.A.; Committee: Messrs. W. H. B. Addison, G. S. Armstrong, M.L.A., C. Bishop, J.P., D. Brown, sen., J.P., W. Campbell, T. G. Colenbrander, A. E. Foss, J.P., A. S. L. Hulett, J.P., J. B. Hulett, C. Jackson, G. Nicholson, J.P., T. Polkinghorne, J. W. Perkins, J.P., E. Saunders, J.P., G. Stewart, and J. H. Stansell; Hon. Secretary and Treasurer: H. Curtis Smith (Stanger)

VRYHEID (WARD I) AGRICULTURAL SOCIETY.—President: E Dalton. Vice-President: J. F. Potgieter. Secretary: F. Kolbe. Assistant Secretary: H. Lombaard. Committee: Secretary, Assistant Secretary, and A. von Levetzow, T. Ries, P. Grobler, F. Molman, A. Steenkamp.

WEENEN AGRICULTURAL SOCIETY.—President: Allan Stuart; Vice-Presidents: R. Garland, R. H. Ralfe, F. I. de Waal; Hon. Treasurer: F. C. Schiever; Hon. Secretary: E. Cautherley; Auditor: S. Wolff; Executive Committee: Hon. H. D. Winter M.L.A., J. W. Moor, M.L.A., D. W. Mackay, T. H. Hindle and E. L. Estrange; Manager of Show Yard: S. Vaughan; Assistant: A. Clouston.

WEENEN COUNTY HORTICULTURAL SOCIETY.—Committee of Management: The President and Treasurer of the Weenen Agricultural Society and C. J. Offord, G. W. Linfoot, T. J. Nunn, Dr. Brewitt, S. Vaughan; Hon. Secretary: E. Cautherley.

ZULULAND FARMERS' ASSOCIATION.—President: F. W. White; Vice-President: C. E. Symonds. Secretary: R. H. McAlister. Committee: Hon. D. C. Uijs, A. W. Symonds, H. T. James, R. J. Ortlepp, J. N. R. Dixon.

ZULULAND COAST FARMERS' ASSOCIATION.—President: G. H. Hulett; Vice-President: C. Hill; Hon. Secretary and Treasurer: F. Brammage, Ginginghlovu.

(The Editor will be obliged if the Hon. Secretaries will supply him with lists of the Executives of their Associations.)

Cows Wanted.

WANTED urgently, cows just calved or due to calve. Old animals suitable; any breed.

Apply—P.O. Box 282,
Pietermaritzburg.

Diamond Drilling.

SOME of the departmental diamond drilling plants are at present disengaged and available for hire for boring for either minerals or water. Particulars as to terms of hire may be obtained from the undersigned,

CHAS. J. GRAY,
Commissioner of Mines.

Experiment Station Notices.

TREES FOR SALE.

To encourage tree-planting, transplants and seeds of forest trees are supplied by Government, so far as in stock, at the undermentioned rates, exclusive of carriage, from the Government Nursery, Central Experimental Farm, Cedara.

Transplants of Eucalyptus, Pines, Acacias, Casuarinas, Cupressus, etc., about 25 trees in each tin, at 8s. 4d. per 100 trees. Trees in separate tins at 1s. each.

Transplants of scarce kinds, larger trees, or surplus stock, when available will be charged at special rates, which will be furnished on application.

Tree seeds, in variety, at 1s. per packet. Price per pound, which fluctuates, will be furnished on application.

Package and postage of seed, when required, charged 1s. per lb extra.

Orders for present or spring delivery should be addressed to the **Chief Afforestation Officer, Cedara**, and must be accompanied by a remittance in cash or postal order. Cheques cannot be accepted.

PURCHASE OF TREE SEEDS.

With a view to the encouragement of seed production in the Colony, offers are invited from persons having locally-grown seed of exotic trees for sale. Not less than one pound will be purchased; and a specimen bearing seed vessels or flowers should be sent for identification purposes. Offers should be made in the first instance to the Chief Afforestation Officer, Cedara.

SILVER POPLAR.

Root suckers of the Silver Poplar (*Populus alba*) can be supplied in any quantity, at 8s. 4d. per hundred, on application to the Chief Afforestation Officer, Cedara.

FEES FOR AGRICULTURAL ANALYSIS.

It is hereby notified that Farmers and others can secure analytical determinations from the Government Laboratory, Central Experiment Farm, Cedara, in accordance with the following scale of fees, which is subject to revision:—

	Scale I.			Scale II.		
FERTILIZERS AND FEEDING STUFFS:	£	s	d.	£	s	d.
Determination of 1 constituent ...	0	7	6	0	5	0
" 2 or 3 constituents ...	0	15	0	0	10	0
Complete analysis ...	1	1	0	15	0	
SOILS: Partial analysis of a soil in relation to its fertility ...	1	1	0	0	10	6
Complete analysis of a soil ...	2	2	0	1	1	0
WATER: Irrigation and drainage ...	1	10	0	0	10	6
VEGETABLE PRODUCE: Fodders, Ensilage, Grains, &c. ...	1	1	0	0	15	0
MILK, CREAM, BUTTER: Fat only ...	0	5	0	0	2	6
" " : Complete ...	0	15	0	0	7	6
WATTLE BARKS AND TEA: Tannin ...	0	5	0	0	2	6
CATTLE DIPS: Quantitative analysis of 1 to 3 principal constituents ...	0	10	0	0	5	0
INSECTICIDES:						
Qualitative analysis each constituent ...	0	5	0	0	2	6
Quantitative " " " ...	0	10	6	0	5	0

Scale No. 1 is applicable to samples handed in by Merchants and Dealers, and where trade interests are involved.

Scale No. 2 is applicable to samples forwarded by *bona fide* Farmers and Gardeners.

Samples will be accepted at the discretion of the Department, and must be properly selected and labelled.

The Department reserves the right to publish the results of any analysis performed by it; and, where such is deemed of sufficient public interest, it will remain at the discretion of the Department to remit any charges hereunder.

E. R. SAWER,
Director, Experiment Stations.
Acting Conservator of Forests.

November 22nd, 1907.

TENDERS FOR MONO-RAIL SYSTEM.

Tenders are invited for the purchase of 6,400 feet of mono-rails, with points, etc., and four sugar cane trucks, from the Central Experiment Farm.

Tenders should be addressed to the Director of Experiment Stations, Cedara, and should be submitted with the least possible delay.

LAND AND AGRICULTURAL LOAN FUND

The Land and Agricultural Loan Fund has now been established, and the Board are prepared to receive applications for advances on security of first mortgage on fixed property. Applications must be made upon special printed forms, which can be obtained, together with full particulars as to the conditions under which advances are made, from the office of the fund, Post Office Buildings, Pietermaritzburg.

All correspondence should be addressed to the Secretary, Land and Agricultural Loan Fund, P.O. Box 357, Pietermaritzburg.

CENTRAL EXPERIMENT FARM, CEDARA.

In order to minimise interference with the general course of work on the Central Experiment Farm, Cedara, it has been found necessary to set apart one day of the week, namely, Friday, as a visitors' day.

Arrangements will accordingly be made on that day for receiving visitors and showing them round the Farm. A trap will be at Cedara Station to meet the up 9.50 a.m. train; and if intending visitors from up-country will give notice to the guard at Howick Station, on their way down, a trap will be sent to meet the train which passes through Cedara at 11.2 a.m. Visitors travelling by other trains will also be met if they will previously make arrangements by writing.

On other than the visitors' day, visitors may be received by appointment, but special attention cannot be guaranteed in regard to their being shown round.

As the catering involves such a strain upon the resources of the School of Agriculture, it has been decided to limit the number of delegates from any one Association to 25 per cent. of its membership. At least 14 days' clear notice must be given by Associations, so that there may be time to make all necessary arrangements.

In view of the fact that Parliament has refused to grant the necessary funds, the cost of railway tickets can no longer be borne by the Department of Agriculture.

All communications in connection with proposed visits to the Experiment Farm should be addressed to the Director of Experiment Stations, Cedara.

24th September, 1907.

W A. DEANE Minister of Agriculture

The treatment that the dairy heifer receives during her first two years determines her value in after life. Do not let the heifers stop growing.

Government Abattoirs and Cold Stores.

PIETERMARITZBURG.

CATTLE may now be received for slaughter at the Government Abattoir, Maritzburg, and meat may be placed in the Cold Stores if so desired. It must, however, be understood that owners will be required to make their own arrangements for the sale of the meat of cattle sent in for slaughter, the Government being unable to offer facilities or to accept responsibility in this regard.

ABATTOIR CHARGES.

The charges for killing space, per month, are :—

Cattle up to 50 head Minimum charge £4.

Cattle over 50 head, in addition to above.. 1s. 3d. per head.

For cattle forwarded to Abattoir and disposed of to local butchers, an Abattoir Fee of 1s. per head will be charged.

For killing and handling Cattle, and placing same in Cold Storage, if required, or meat to be taken away by customer from hanging-room, the charge is 4s. per head (including Abattoir Fee).

COLD STORAGE CHARGES.

Chilling and Freezing Beef, 1st week 1s. 3d. per qr.

" " 2nd " 1s. "

" " Remaining weeks ... 9d. "

DURBAN.

(ABATTOIR ONLY.)

Cattle may be received for slaughter at the Government Abattoir, Point, Durban, As the Government is unable to offer facilities for cold storage at Durban, or for the sale of the meat of cattle sent for slaughter, it must be understood that owners will be required to make their own arrangements in these respects, and the Government is unable to accept responsibility in either regard at Durban.

ABATTOIR CHARGES.

For cattle forwarded to Abattoir and disposed of to local butchers an Abattoir Fee of 1s. will be charged.

The charges for killing and handling cattle will be 4s. per head (including Abattoir Fee).

Department of Agriculture, Maritzburg,

22nd May, 1908.

Publications Issued by the Department of Agriculture.

THE following publications, issued by the Department of Agriculture, are still in print, and copies may be obtained free (except those with price attached) upon application to the office of the *Agricultural Journal*, Department of Agriculture, Pietermaritzburg. The figures in square brackets (e.g. [1904]) are the years in which the various publications were issued.

No.

BULLETINS.

- 2.—“Manures on the Natal Market, 1902,” by Alex. Pardy, F.C.S., Analyst. [1902.]
- 2a.—“Treatment of Milk and Cream, from the Producer to the Consumer,” by E. O. Challis, Dairy Expert. [1904.]
- 4.—“Manures on the Natal Market, 1903,” by Alex. Pardy, F.C.S., Analyst. [1903.]
- 6.—“Manures on the Natal Market, 1904,” by Alex. Pardy, F.C.S., Analyst. [1904.]
- 7.—“Tree-planting in Natal,” by T. R. Sim, F.L.S. Conservator of Forests. [1905.]
(Price 2s. 6d., post free.)
- 8.—“Agricultural Co-operation,” by E. T. Mullens, Secretary, Minister of Agriculture. [1905.]
- 10.—“Manures on the Natal Market, 1905,” by Alex. Pardy, F.C.S., Analyst. [1905.]
- 11.—“East Coast Fever,” by S. B. Woollatt, Principal Veterinary Surgeon. [1906.]
- 12.—“Manures on the Natal Market, 1906,” by Alex. Pardy, F.C.S., Analyst [1906.]

REPORTS.

- Annual Report of the Agricultural Department, 1902. (Includes Reports of the Director of Agriculture, Entomologist, Conservator of Forests, Dairy Expert, Editor *Agricultural Journal*, etc.). [1903.]
- Report of the Secretary, Minister of Agriculture: January 1, 1903, to June 30, 1904. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1905. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1906. [1906.]
- (For a continuation of the statistics given in these reports see reprint “Natal's Progress in 1906,” noted below.)
- Fourth Report of the Government Entomologist: 1903-4. [1905.]
- Fifth Report of the Government Entomologist: 1904-5. [1906.]
- Sixth Report of the Government Entomologist: 1905-6. [1907.]
- (The Third Report of the Entomologist is included in the “Report of the Agricultural Department, 1902,” noted above.)
- Report of the Conservator of Forests, 1902. [1903.]
- Interim Report of the Conservator of Forests up to December 31, 1905.
- Report of the Principal Veterinary Surgeon, for year ended 30th June, 1906. [1907.]
- First Annual Report of the Land Board, 1905. [1906.]
- Annual Report of the Land Board, 1906-7.

MISCELLANEOUS REPRINTS, ETC.

- Black Spot (“Letter Book Pages”: reprinted from *Journal*.)
- Mealie Grubs (do do do)
- Mosquitoes (do do do)
- Woolly Aphis (do do do)
- Cotton. By A. N. Pearson, Director, A. E. & C. (Reprinted from *Journal*: 1904.)
- Co-operation. By E. T. Mullens, Secretary, Minister of Agriculture. (Reprinted from *Journal*: 1907.)

MISCELLANEOUS REPRINTS ETC.—*Continued.*

Citrus Fruit Export. (Reprinted from *Journal*: 1907.)

Natal's Progress in 1906. (Reprinted from *Journal*: 1907.) The statistics contained in this paper are on the same lines as those in the Annual Reports for previous years of the Secretary, Minister of Agriculture.

Fibre Cultivation. (Reprinted from *Journal*: 1907.) This paper is a summary of Bulletin No 13 of the Department of the Interior, Bureau of Agriculture, Manila.

Sisal, Mauritius Hemp and other "Aloe" Fibres. By T. R. Sim, F.L.S., Conservator of Forests. (Reprinted from *Journal*: 1907.)

The Fibre Industry of Mauritius. By Leonard Acutt, J.P., Tongaat; Member of the Land Board, Natal. (Reprinted from *Journal*: 1907.)

South African Products Exhibition, 1907. Report of T. R. Sim on the Natal Exhibits. (Reprinted from *Journal*: 1907.)

Poplar Timber for the Local Manufacture of Match-boards. By E. R. Sawyer, Director, E.S. (Reprinted from *Journal*: 1908.)

Notes on Agriculture in Natal. [1905.]

Judging Fruit, Flower, Plants and Vegetables at Shows. By T. R. Sim, F.L.S., Conservator of Forests. [1906.]

Agricultural Statistics, Natal, 1905-6. [1907.]

Model Rules for Agricultural Co-operative Societies. (Price 1s., post free.)

SOUTH AFRICAN STUD BOOK.

A record of all classes of Stock: the object being to encourage the breeding of thoroughbred stock and to maintain the purity of breeds, thus enhancing their value to the individual owner, and to the country generally.

Applications for Membership and Entries of Stock should be addressed:—

For CAPE COLONY ... A. A. PERSSE, P.O. Box 703, Cape Town.

„ TRANSVAAL ... F. T. NICHOLSON, P.O. Box 134, Pretoria.

„ ORANGE RIVER COLONY... E. J. MACMILLAN, Government Buildings, Bloemfontein.

THE SOUTH AFRICAN STUD BOOK

IS OBTAINABLE OF:—

T. MASKEW MILLER,
ADDERLEY STREET,
CAPETOWN.

PRICE 10s. 6d.

A. A. PERSSE,
SECRETARY, SOUTH AFRICAN STUD BOOK ASSOCIATION

SITUATION WANTED.

WANTED by young man Situation on farm. Experienced both with Stock and Agriculture; good character and references.—274, Bulwer Street, Pietermaritzburg.

WANTED.

BONES AND FAT; any quantity. Best prices given.—Apply, WEBSTER, Bisley.

QUIBELL'S LIQUID DIP.

Thousands of gallons of this is used in the Colony annually.

QUIBELL'S POWDER DIP.

This for several years has been sold in cases of **40** $2\frac{3}{4}$ lb. packets, mixing 1 to 30 gallons water, but to meet the wishes of Farmers regularly using this Dip it will in future be sold in cases containing **48** $2\frac{1}{4}$ lb. packets, mixing, 1st Dipping—1 to 25 gallons water; 2nd Dipping—1 to 50 gallons; thus, while in every way efficient for the eradication of scab, means a considerable saving in the cost of Dipping.

QUIBELL'S PASTE CATTLE DIP.

The popularity of this famous Dip is still maintained. Its reputation for keeping Cattle and Horses in a healthy condition is known to almost every farmer.

QUIBELL'S Disinfectant Fluid "KEROL."

Retains its high standard in germicidal efficiency. One bottle or drum of "Kerol" does the work of 15 bottles or drums of carbolic acid.

It is used by the South African Governments, Municipalities, Hospitals, etc., and should be used in every Home as a preventive against Infectious Diseases, for General Sanitary Purposes, for Kennels, Poultry, Stables, etc.

CHAS. W. HOLMES,

202, LONGMARKET STREET, PIETERMARITZBURG.

SOUTH AFRICA'S REPRESENTATIVE—

QUIBELL BROS., Ltd., Newark (Eng.).

MOLASSINE

MEAL

***For
Stock
of all
kinds.***

**Unsurpassed by any other
Food Condiment.**

EVERY PROGRESSIVE FARMER KNOWS
ITS VALUE AND USES IT.



TRY IT on any animal in low condition and
CONVINCE YOURSELVES.

Packed in 100 lb. Bags and stocked by all Produce
Dealers.

RAILAGE AT S.A.P. RATES.

For Pamphlets, etc., apply to—

**The MOLASSINE CO. (South Africa),
LIMITED,**

BOX 400, DURBAN.

Factory: MOUNT EDGECOMBE.



THE FOOD

for HORSES, MULES, COWS, SHEEP,
PIGS, DOGS, and POULTRY.

E. BURMESTER,

The Leading
JEWELLER,
WATCHMAKER,
and OPTICIAN.

86, Adderley Street, CAPETOWN.



3 Diamonds,
35s.



4 Diamonds, 3 Rubies, and
3 Sapphires, £5 15s.



9ct. from 5s.
18ct. from 14s. 6d.



All Gold,
20s.



15ct. with 1 Diamond and 1 Sapphire, £4 17s. 6d.



Real Pearls and Turquoise, 14s.

Established 1864.

Write for Catalogue No. 27.

OVER 1,000 ILLUSTRATIONS. POST FREE.



Sterling Silver
Cabinet Photo Frame, 10s.



3 Turquoises,
7s. 6d.



Silver, 2s. 6d.
Gold, 14s. 6d.



Sterling Silver Watch Case,
with Watch complete, 42s.



Silver Gilt Acorn
Hatpin, 2s.

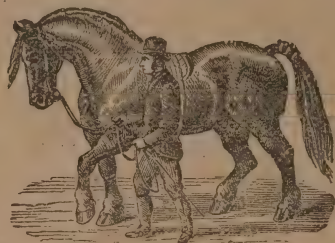
No Duty Payable on Goods
sent to any part of South
Africa.

E. BURMESTER.

BENTLEY & VANDERPUMP'S

CONDITION

POWDER.



PREVENTS

HORSE

SICKNESS.

READ THE FOLLOWING TESTIMONIALS:—

DEAR SIRs,

I have used your Condition Powder and have found it to surpass anything I had tried. My horses felt the benefit of the Powder before many days, and I find that the use of the Powder for a few days from time to time, keeps them in perfect condition and free from disease of every description.

DURBAN, NATAL, *September 11th, 1903.*
Yours faithfully, EUGENE RENARD.

TO LENNON LIMITED, Durban.

DEAR SIRs,

THE BRICK YARDS, UMGENT, DURBAN, NATAL,

September 26th, 1900.

For many years past I have purchased Bentley and Vanderpump's Condition Powders as a Medicine for the Horses and Mules in use at my Brick Fields, and I must say that I cannot estimate the value of the Powders sufficiently, as my stables are always free from sickness, and I have never had any serious outbreak among my stock, which I put down entirely to the regular use of your Powders.

They seem to be the only preventive of Horse Sickness that I know of.

You are at liberty to make what use you like of this letter.

Yours faithfully, J. J. JOHNS

MESSRS. LENNON LIMITED, West Street, Durban.

DEAR SIRs,

WENTWORTH, NATAL.

September 30th, 1903.

I have used Bentley & Vanderpump's Horse Condition Powders continuously during the last four years, and am fully convinced that they act as a preventive, and I have to thank them for the fact that my horse did not take sickness last season when horses died all round me.

I am never without B. & V. Powders in the stable.

Yours faithfully, H. A. JACOB.

THIS Powder should be given to all Horses occasionally; it keeps them in good condition by giving tone to the Stomach and purifying the blood. For Grease, Swelled Legs, Coughs and Influenza, it is the Best Remedy.

The dose is a teaspoonful given every night for a week, in a mash or feed of corn, and the horse can be worked as usual all the time, being in fact more fit

IN TINS AT 2/6, 9/- AND 15/- EACH.

May be obtained from Chemists and Store Keepers throughout S. Africa.

SOLE PROPRIETORS—

LENNON LIMITED

Cape Town.
Port Elizabeth.
Johannesburg.
East London.
Durban.

Bulawayo.
Bloemfontein.
Graaff Reinet.
Aliwal North.
Kimberley.

Beaufort West.
Oudtshoorn.
Mateking.
Fordsburg.
Germiston.

Wynberg.
Paarl.
Stellenbosch
and
London, England.

B E W A R E O F I M I T A T I O N S .

PEARL SOAP!

— WHAT IS IT ? —

It is JUST THE BEST SOAP for all Household Purposes that can be bought. It is ABSOLUTELY PURE, therefore no INJURY TO THE CLOTHES. It gives a SWEET, FRESH SMELL to the clothes that is absent in other Soaps. It is not the CHEAPEST at the beginning, but, because it lasts longest, IT IS THE CHEAPEST IN THE END.

PEARL SOAP

— IS —

NATAL SOAP.

AND PACKED 3 TWIN TABLETS IN CARTON.

—:O:—

If you want to SAVE MONEY, and at the same time

HELP NATAL ALONG,

Ask for Pearl Soap.

SOLD AT 1s. PER PACKET BY ALL PATRIOTIC GROCERS.

—:O:—

If your Grocer does not stock PEARL SOAP please write to the

MANUFACTURERS . . .

**NATAL SOAP WORKS, LIMITED,
DURBAN.**

The Corn Exchange. (ESTABLISHED 1868.)

R. MASON & SON,

289, CHURCH STREET, PIETERMARITZBURG,

MILLERS,

Grain, Produce, and Seeds Merchants.

SPECIAL.—Boer Meal, Crushed Wheat and Rolled Wheat (Kühne System).

PIGEON FOODS.—Maple Peas, Hemp, &c., &c. Poultry and Chicken Mixtures. Thorley's Ovum.

HORSE-FOOD.—Rolled Oats, Wheaten Bran, Crushed Mealies, Molassine Meal, Rock Salt, Chaffed Forage and Lucerne, &c., &c., also Cow Meal.

FARMERS' AGENCY.—Consignments of Produce of all kinds realised to best advantages. Account Sales prompt with remittances.

SEEDS ! SEEDS !!

We hold Prime Fresh Stocks of:—

Mangel Wurzel, Swedes, Turnips, Sugar Beet, Paspalum, Italian and Perennial Ryegrass, Provence Lucerne, Rape (Dwarf Essex), Thousand Headed Kale, Cow Peas, Black Wattle, etc., etc.

For description, mode of cultivation and prices, see our New Catalogue (free on application).

R. MASON & SON,

THE CORN EXCHANGE SEEDS DEPARTMENT,

289, Church Street, Maritzburg.

P.O. Box
21

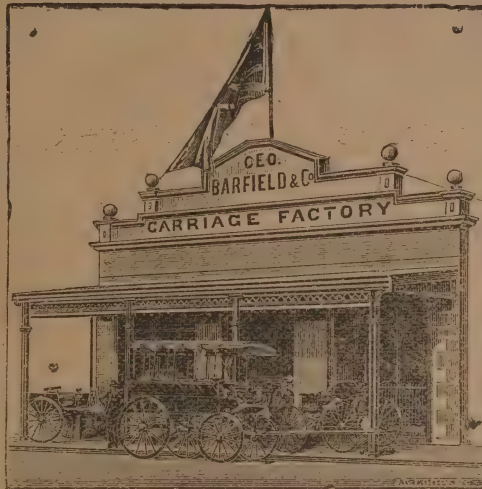
GEORGE BARFIELD & CO.,

TELEPHONE
391

212, Longmarket Street, Maritzburg.

**Builders of High-
Class Vehicles.
Both for Town
and
Country Use.**

**New and Second-
hand Vehicles al-
ways on Hand.**



**Estimates given
for all kinds of
Carriage Work.**

Direct Importers.

**The Trade sup-
plied at most rea-
sonable Prices.**

The Wattle Extract Co.

**16 & 17, ANGLO-AFRICAN HOUSE,
SMITH STREET, DURBAN.**

—BUYERS OF—

WATTLE BARK

IN ANY QUANTITY. PROMPT SETTLEMENTS ON RECEIPT OF GOODS.

HIGHEST PRICES GIVEN. NO COMMISSION CHARGED.

- - CORRESPONDENCE INVITED - -

P.O. Box 734.

Telegrams : "ATLANTIC."

NOW READY

A Fruit Grower's HANDBOOK

BY

CLAUDE FULLER.

PREPARED FOR THE USE OF FRUIT GROWERS, WITH NUMEROUS
SELECTED ILLUSTRATIONS.

Price 7s. 6d., including Postage.

THE TIMES PRINTING & PUBLISHING CO., LTD.,
P.O. BOX 204.

The Times Printing & Publishing Co., Ltd.,

P.O. Box 204, Pietermaritzburg.

*Please send me.....cop.....of the book entitled "A Fruit Grower's
Handbook," by Mr. Claude Fuller, for which I enclose £ s. d.*

[Sign here] _____

Address _____

ACETYLENE GAS LIGHT.

BRIGHTEST, CHEAPEST, BEST.

ACETYLENE GAS LIGHT.

FOR PRIVATE RESIDENCES, CHURCHES, PUBLIC BUILDINGS, ETC

ACETYLENE GAS LIGHT.

UNRIVALLED IN SIMPLICITY, SAFETY, AND ECONOMY.



For Free Estimates Write to:—

Large Quantities of

CALCIUM

CARBIDE

Always in Stock.

L. Hirsch & Co.,

ACETYLENE GAS ENGINEERS,

142, WEST STREET, DURBAN.

P.O. BOX 513.

HAYNE & CO.,

GENERAL BUYERS OF NATAL PRODUCE.

Mealies, Kafir Corn, Wattle Bark,

Mineprops, etc. etc..

— ADDRESS —

72 & 74, COMMERCIAL ROAD, DURBAN.

— ALSO AT —

8, HARRISON STREET, JOHANNESBURG.

When you ask for

BOVRIL

do not take a cheap imitation. BOVRIL is all beef and is a standardised strength-giving food.

Always have BOVRIL handy,

By Royal Warrant to



His Majesty the King.



TO FARMERS. . . .

The "Times of Natal."

SPECIAL NEW SCALE FOR SMALL PREPAID ADVERTISEMENTS IN PEOPLE'S COLUMNS.

A MOST POPULAR AND EFFECTIVE METHOD OF ADVERTISING.

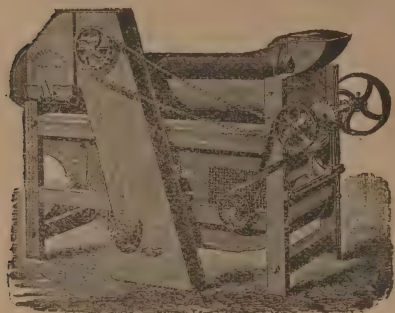
The "Times of Natal," with a view of still further popularising the paper as a medium for the insertion of "Small" Advertisements, have arranged a REVISED SCALE OF CHARGES for this class of advertisements.

Special Headings are given to "LIVE STOCK," "PRODUCE," etc., and thus Farmers announcements enjoy a particular prominence,

This Scale only applies to advertisements accompanied by remittance. Advertisements of this class, which are not prepaid, will be charged at a higher rate.

SCALE OF CHARGES.

NUMBER OF WORDS.	NUMBER OF INSERTIONS.			
	One.	Three.	Six.	Over Six.
20	1s.	2s.	3s.	6d. per insertion
30	1s. 6d.	3s.	4s. 6d.	9d. "
40	2s.	4s.	6s.	1s. "
50	2s. 6d.	5s.	7s. 6d.	1s. 3d. "
Every additional 10 Words	6d.	1s.	1s. 6d.	3d. "



Mealie . . Shellers —AND— Winnowers.

===== OF ALL BEST MAKES. =====

“SUSQUEHANNA” Mealie Sheller works specially well shelling large ears, and delivers the cobs at the end separate from the shelled corn. For Hand Power only.

“WAVERLEY” Mealie Sheller has a cob separator, also blower or fan, operated from main shaft, and a heavy combined band and balance wheel. Suitable for Hand or Power.

“CORA LINN” Mealie Sheller for Power is greatly improved. Fans now work at double speed, driving out every particle of dust, cob and dirt.

“SOUTHERN CROSS” Mealie Sheller for Hand or Power. With corn elevator or bagger.

CORN DRESSING AND WINNOWER MACHINE.

Simple and efficient. Fixed with shutters for regulating the wind and Slip Boards for dressing small seeds. Riddles for Oats, Barley, Mealies, Beans and Wheat.

Steel Murray & Co.,

Pietermaritzburg.

J. MERRYWEATHER & SONS, Wagonmakers, Blacksmiths, &c.,

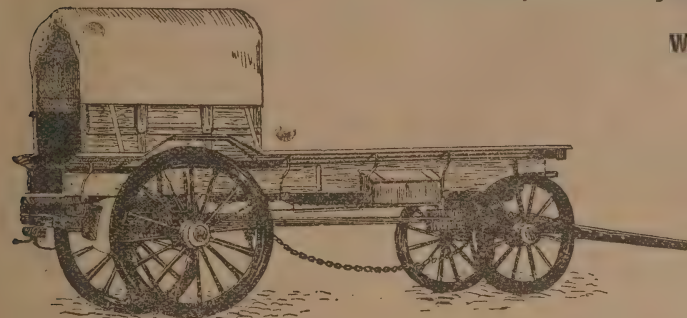
Supply Wagons of every description on Shortest Notice and at Low Prices ; Workmanship and Material Guaranteed. Tip Carts, Light Delivery Carts ; also Light Spring Carts suitable for Farmers and Dairymen.

TROLLEYS, both Heavy and Light.

WHEELBARROWS.



All Sizes of Wheels
in Stock or Made
to Order.



Sneezewood, Stinkwood, Stinkwood Shafts Sawn or Bent to Shape, Forgings, either for Ploughs, Wagons, or Mowing Machines.

352, CHURCH STREET, PIETERMARITZBURG.

By SPECIAL
APPOINTMENT TO



HIS EXCELLENCY
SIR HENRY MCCALLUM,
K.C.M.G.

M'CRYSTAL & HARKNESS,

Saddlers and Harness Makers,

186, CHURCH STREET, PIETERMARITZBURG.

Postal
Address :

P.O. 176,

Maritz-
burg.

FARMERS, STUDY YOUR INTERESTS

By Buying Sound and Reliable Goods.

- - THIS CAN BE DONE - -

By placing your orders with

Tele-
graphic
Address

Saddlery,
Maritz-
burg

LYLE BROTHERS,

**Saddlers Harness,
and Bag Makers.**

246, Church Street, Maritzburg.

Whose endeavour has always been to give the best value at lowest possible prices consistent with quality. Harness and Saddlery of every description made to order. Large Stocks on Hand.

REPAIRS EXECUTED WITH NEATNESS AND DISPATCH.

Branches—LADYSMITH. DUNDEE. AND VRYHEID

FLEET.

	Tons.
S.S. Umhlali ...	5,000
" Umzumbi...	5,000
" Umvolosi...	4,500
" Umsinga ...	4,500
" Umtata ...	3,500
" Umgeni ...	3,500
" Umvoti ...	3,500
" Umtali ...	3,500

**FLEET.**

	Tons.
S.S. Umfuli ...	3,300
" Umhloti ...	3,100
" Umkuzi ...	2,800
" Umbilo ...	2,500
" Umlazi ...	2,200
" Umzinto ...	2,200
" Congella ..	2,200
" Pongola ...	1,800

FORTNIGHTLY FAST DIRECT SERVICE BETWEEN
LONDON AND NATAL.

To Importers of LIVE STOCK, POULTRY & DOGS:—

This Line of Steamers affords excellent advantages for the importation of Live Stock of all kinds, and has an unrivalled record for the carriage of the best Pedigree Live Stock and Poultry of the Colony.

The Steamers of the London Service have Saloon accommodation amidships on the Main Deck, and are fitted with Refrigerators, Electric Light, and Bells.
 Surgeon and Stewardess carried.

Particulars of Sailing Dates, Freight, and Passage may be had on application to:—

KING & SONS, West Street, Durban.

Agricultural Pests

... WITH ...

... METHODS OF PREVENTION,

... BY ...

MISS E. A. ORMEROD,

Late Consulting Entomologist to the Royal
 Agricultural Society (of England).

Price 1s. By Post, 1s. 1d.

The Times P. & P. Co., Ltd., Maritzburg.

Pickstone's FRUIT TREES

(SEASON 1908).

DECIDUOUS TREES - from 1s. upwards

CITRUS TREES - - from 2s. upwards

(Dependent upon Quantity Ordered).

TRADE



MARK

Delivered, carriage paid, to your nearest Railway Station if 50 trees and upwards are ordered.

For Catalogue and Price List, in English or Dutch, apply to—

H. E. V. Pickstone & Bro.,
P.O. Groot Drakenstein, C.C.

We hold Clean Bill for Trees for all South Africa.

ODAMS' Fertilizers

QUALITY UNIFORM, AND ANALYSIS GUARANTEED.

ODAMS' "Complete" Fertilizer for Potatoes, Forage, and General Use.—It contains the elements necessary for vigorous and healthy plant life. Where the crops are entirely removed from the land, and nothing, or but little returned to it except in the form of cattle manure or decomposed vegetable refuse, a moderate application of ODAMS' COMPLETE FERTILIZER is calculated to maintain the soil in a state of fertility, and restore to productiveness soils exhausted by continuous cropping. This Manure for Potatoes is calculated to procure a PROLIFIC YIELD of Large Sound Tubers, without the assistance of Kraal Manure. ENORMOUS YIELDS HAVE BEEN RAISED by the aid of ODAMS' "COMPLETE" FERTILIZERS on Potatoes. It is the most economical Manure in use.

ANALYSIS—

18 to 20 per cent. of Soluble Phosphate.	
5 to 7 " Undissolved Phosphate.	
4 to 5 " Ammonia.	
2 to 3 " Pure Potash.	

ODAMS' Vitriolized Bones

(PURE DISSOLVED BONES).

Vitriolized Bones are very lasting in their effects, and greatly improve the productiveness of the land, being rich in undissolved Bone, Phosphates, and Ammonia. By the treatment the Bone is only partly dissolved, but all is in a softened state, suitable for the continuous nourishment and rapid growth of the plant. Bone thus Vitriolised will be found to give great permanence of fertility in all varieties of soils—and far superior results than Bone Dust on Mealies.

ANALYSIS—

32 to 35 per cent. Total Phosphates.	
12 to 16 " Soluble "	
2.47 to 2.66 per cent. Nitrogen equal to	
3 to 3 per cent. Ammonia.	

Large Shipments of the above Fertilizers are now due to arrive, in time for the coming season, and large repeat orders from leading Natal Farmers have already been placed for delivery on arrival.

In the present state of Railway Traffic, it is very necessary that orders should be placed early to ensure despatch in time.

PRICE AND FULL PARTICULARS—

W. DUNN & CO., DURBAN,

AGENTS

ODAMS' MANURE & CHEMICAL Co., LIMITED.

The Petrolite Lamp.

PORTABLE. INCANDESCENT.

NO LIQUID. NO WICK.

IF OVERTURNED GOES OUT. ACCIDENTS IMPOSSIBLE.

NO WORKING PARTS. COSTS LESS THAN PARAFFIN.

SIX HOURS OF BRIGHT, STEADY 50-CANDLE-POWER LIGHT FOR ONE PENNY.

Awarded the Keith Prize for Safety & Economy.

INSURANCE NOT AFFECTED BY ITS USE.

(Sole Agent) John Mayhew, 2, Castle Arcade, Durban.

HUNT, LEUCHARS & HEPBURN, LTD.,

TIMBER MERCHANTS, . . . DURBAN.

Large Stocks of TIMBER, GALVANISED IRON and all
BUILDING REQUISITES.

Estimates given for Wood and Iron Buildings of Every Description and All
Classes of Joinery Work

GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.

P.O. Box 455.

Telegraphic Address: "HUNT."

And at JOHANNESBURG.



AWAY WITH BRUSHES!

BEST WHITEWASHING-DISINFECTING MACHINE.

REPLACES 10 TO 20 MASONS.

"FIX" is employed for painting stalls, walls, dwelling houses, breweries and fermenting cellars; and can be put to various other uses.

... "FIX" SPARES TIME, MONEY and WORK ...

Apply for prospectus at the offices of this Journal. Agents Wanted.

Manufacturer:—**STEPHAN, Scharley, Germany.**

Calvert's Carbolated Creosote

Is the most reliable DISINFECTANT for all purposes. Mixes readily in cold water, and can be used as a wash for Cattle, Horses and Dogs. No farmer should be without it. Price is low and quality guaranteed. In 1 gall. Tins, 5 or 10 gall. Drums, and 50 gall. Casks. Prices on application to:—

Agent for **J. M. Wilson, 398, West Street, Durban.**
F. C. Calvert & Co.'s Preparations. P.O. BOX 282.

— Under Royal Favour. —

'Petter' PATENT Oil Engine.

Awarded GOLD MEDAL at New Zealand International Exhibition, Christchurch, 1907.

Awarded SPECIAL PRIZE and GOLD MEDAL given by His Majesty the King of Italy for the Best Oil Engine for Agricultural Purposes exhibited at the Royal Italian Exhibition, Cologne Veneta, 1907.

Awarded GOLD MEDAL at Wirral and Birkenhead Agricultural Society for the Best Combined Oil Engine and Dynamo, also the SILVER MEDAL for the Best Agricultural Oil Engine exhibited, 1907.

Illustrated Catalogues and Particulars of the "HANDY MAN" and the "PETTER" Oil Engines posted to all parts. Apply to—

D. RIEKIE & CO., Messrs. James B. Petter & Son & Co., Ltd.
 DURBAN, Engineers, P.O. Box 188. LONDON.

STEWARTS AND LLOYDS (SOUTH AFRICA) LTD.,

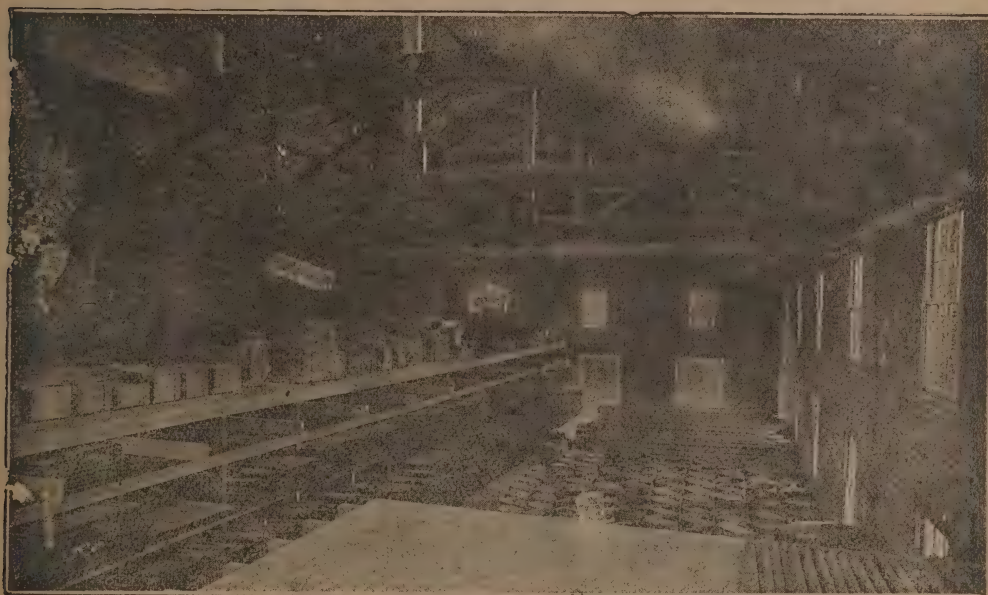
MANUFACTURERS OF WROUGHT IRON

TUBES AND FITTINGS

FOR GAS, STEAM, AIR, AND WATER.

BOILER TUBES.

WELL TUBES.



DURBAN STORE.

Large Stocks held in Durban and Maritzburg of all Sizes
from $\frac{1}{4}$ in to 12 in. English and American Thread.

BOILER TUBES from 2 in. to 4 in.

All Classes of Valves and Cocks Stocked.

Durban Office: 310a, SMITH STREET.

P.O. BOX 131.

Stores: **SMITH STREET.**
MILNE STREET.

Telephone No. 352.

Tele. Add.: "TUBES," Durban and
Pietermaritzburg.

Maritzburg Stores and Offices: **McCALLUM STREET.**

— THE —
“Times of Natal.”

(Established 1851.)

Two Editions Daily.

The Best Paper for Farmers.

Two Columns Daily on Agricultural Topics

Full Cable Services.

Latest Transvaal & Natal Trade & Market Reports.

Interesting Special Features.

Local and District News.

SUBSCRIPTIONS :

NATAL AND ZULULAND:—Daily, £1 6s. per annum; including Weekly Edition, £1 10s.; Weekly Edition only, 12s.

OTHER PARTS OF SOUTH AFRICA.—Daily, £2 per annum; including Weekly Edition, £2 12s.; Weekly Edition only, 18s.

UNITED KINGDOM AND BRITISH COLONIES.—Daily, £2 10s. per annum; including Weekly Edition, £3s. 2s.; Weekly Edition only, £1.

Printing, Publishing and Advertising Offices :

222, Church Street, and Chancery Lane, Maritzburg.

FENCING MATERIAL

Large Stocks of Barbed and Plain Wire
Standards and Straining Posts.

— GATES, —

Cyclone Droppers (or Pickets) and Loops
in Stock or Made to Order.

Also Cyclone Patent Lever Gate.

CYCLONE GATE & FENCE CO., LTD.,

315, CHURCH STREET (Opposite Market Square).

Telegrams—"CYCLONE."

BOX 289.

P.O. BOX 879.

Telegraphic Address: MILLING, DURBAN.

The Natal Mill Elevator Co.

Bankers: The Natal Bank, Ltd.

Mills: UMBILO.

Offices: 319, SMITH STREET, DURBAN.

— WE ARE —

BUYERS OF MEALIES AND WHEAT

— IN ANY QUANTITY —

*** FOR CASH. ***

G. MONHAUPT & Co.,

CABLE ADDRESS—

"MONHAUPT."

P.O. BOX 26.

TELEPHONE 308.

The Esplanade (Corner of
Mona Rd.),

Durban, Port Natal.

— Exporters of —

Wool, Mohair, Hides, Skins, Bark, Maize and other Produce.

Woolpacks, Grain Bags and Bark Bags always on hand.

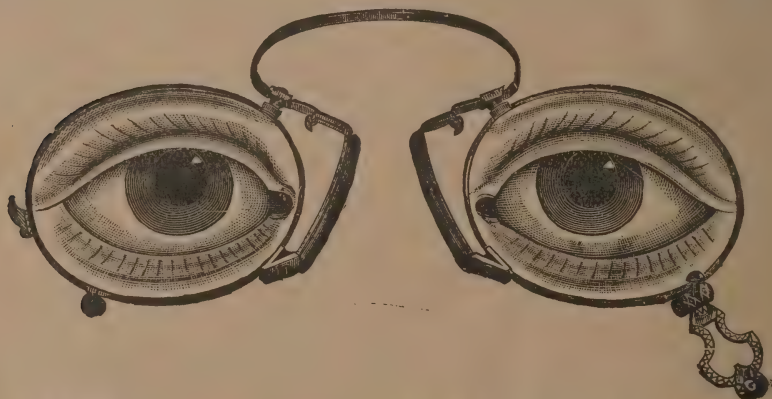
— Agents for —

BUREAU VERITAS GERMANISHER LLOYD

CLASSIFICATION OF SHIPS.

ASSOCIATIONS OF HAMBURG AND BREMEN UNDERWRITERS.

— SETTLEMENT OF CLAIMS. —



FARMERS and COUNTRY RESIDENTS

— Who find their —

EYESIGHT A TROUBLE.

Should make an Appointment with us **BY POST.**

CONSULTING HOURS—Mornings, 10 to 1. Afternoons, 3 to 5.

ELGIE & EMERSON, EYE SIGHT-TESTING OPTICIANS,
49, Gardiner Street, Durban.

F.S.M.C., LOND. (BY EXAM.),

Jeyes' Disinfectants

ARE THE ONLY DISINFECTANTS USED IN THE
ROYAL HOUSEHOLD, STABLES & KENNELS . .

RELIABLE AND SAFE IN USE.



Jeyes' . .
Cyllin . .

The strongest Fluid Disinfectant known to science. 15
time stronger than Carbolic
Acid, but harmless to Human
Life.

A written guarantee of efficiency
can be given.

Can be used for Poultry, Horses, Cattle, etc., etc.

THE CHEAPEST AND MOST EFFICIENT
DISINFECTANT ON THE MARKET . .

JEYES' DIP: IS USED WITH GREAT SUCCESS
(FLUID.) ALL OVER THE WORLD.

PARTICULARS FROM:—

FENWICK & CO.,
Club Arcade, DURBAN.

CLARKE BROS. AND BROWN, LTD.

Specialists in Butchers', Bakers', & Dairymen's Requisites.

Sole Agents for **Ear-Rivets** for Marking Sheep, Cattle,
and all kinds of Live Stock.

LARGE STOCKS OF ALL KINDS OF DAIRY MACHINERY
AND APPLIANCES.

Plans and Estimates for
complete Factory Plants
for Milk Pasteurizing,
Butter Making and
Cheese Making, for-
warded on receipt of full
particulars.

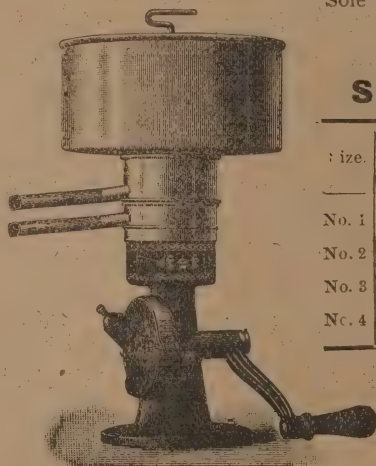
WRITE FOR OUR ILLU-
STRATED CATALOGUE.

Sole Agents for the
**"Eskil" Cream
Separator,**

Made in one size only:
Guaranteed capacity
10 Gallons per Hour.

Price £4 15s. Nett.

Free on Rail, nearest
Railway Station.



Sole Agents in South Africa
for the

**"VEGA"
SEPARATOR.**

Size.	Guaranteed Capacity per Hour.	Price.
No. 1	17 Gallons.	£8 10s.
No. 2	28 Gallons.	£10 10s.
No. 3	45 Gallons.	£14 10s.
No. 4	72 Gallons.	£19 10s.

Delivered Free on
Rail, nearest Railway
Station.

Sold under full
Guarantee.

AWARDS 1908.—*First Prizes have been won at Rosebank, Port Elizabeth, and Johannesburg, for Best Collection of Dairy Appliances and Machinery,*

For Prices and all particulars, please apply to—

CLARKE BROS. & BROWN, LTD.,
Dairy Supply Department,
287, Pine Street, DURBAN.

Also at—

JOHANNESBURG, CAPETOWN, EAST LONDON, AND PORT ELIZABETH

J. A. PETERS,

Forage & Corn Merchant,

Army Contractor,

184, Commercial Road,

MARITZBURG,

Has for Sale at Lowest Rates:—

	French Early Rose Seed Potatoes (just arrived).		
RACE	Algerian Seed Oats (reputed rust- resisting).	SPECIALITIES	
HORSE	Lucerne Seed.	IN	
FOOD	Compressed Fodder (American and Australian), Lucerne, Australian and American Bran, Oil Cake.	HORSE BEANS	
A	Best Whole and Rolled Feed Oats.	AND	
SPECIALITY.	Pigeon Peas, Fowls' Food, Oyster Shell.	PIGEONS'	
	Coolie Rice, Dhol.	PEAS.	
	Training and Ordinary Feed Forage always on hand, and all kinds of Produce.		

**COLONIAL PRODUCE BOUGHT AND DELIVERY TAKEN
AT ANY RAILWAY STATION.**

Postal Address : P.O. BOX 197

Telegrams : "PETERS."



Stud, Stock, and Farm.

RATES OF CHARGES.—20 words for 3 months, 3s. 30 words for 3 months 4s. 6d. 40 words for 3 months, 6s. Intending advertisers are requested to communicate with the Publishers direct.

STUD.

P. D. KIMBER, MARITZDAAL, THE DARGLE.—Breeder of P. Yorkshire Coach Horses, Cleveland Bays, Hackneys, and Pure Breed Shetlands. Stallions, Mares, Young Stock, Saddle Horses, Remounts and Well-Matched Pairs always on sale. Young Horses selected privately trained to saddle or harness to suit purchasers. Also Breeder of Shorthorn Cattle.

P. OTTO, J.P., SOMERVILLE, RIET VLEI, Breeder of Pure-Breed P. FRIESLANDS, RAMBOUILLET RAMS, AYLESBURY DUCKS, DORKINGS, AMERICAN BRONZE TURKEYS.

WILLIAM WOOD, "WOODFIELD" STUD FARM, NOTTING-HAM ROAD.—Breeder of Pedigree and Grade South Devon Cattle (heavy milking strain). Milk register kept. Young Bulls for sale. Also Shropshire Down Sheep (prizes won last season included a championship, open to all breeds).

STOCK.

PURE-BRED MIDDLE WHITE YORKSHIRE PIGS for Sale; Boars and Yelts; always on hand.—**C. HINGESTON,** Sutherlands P.O., near Maritzburg.

SITUATION WANTED.

GERMAN, aged 21, brought up on a Natal farm, seeks situation on an English farm in Natal.—State conditions, &c., to **O. STEGAN,** P.O., Elandsdraal, Umsinga.

FOR SALE.

ORANGE PLANTS.—Natal Victoria, Natal Victoria Seedlings, and other varieties.—**D. BROWN,** Darnall.

Index to Advertisements.

	PAGE.
Agricultural Pests, etc,	14
Barfield, George, & Co.	7
Bifurcated & Tabular Rivet Co., Ltd.	26
Bovril	10
Brown, D.	26
Burmester, E.	3
Clarke Bros. & Brown, Ltd.	24
Cooper, Wm., & Nephews	vi.
Cotts, Wm., & Co.	iii, iv.,
Cyclone Gate & Fence Co., Ltd.	21
Dunn, W., & Co.	16
Elgie & Emerson	22
Fenwick & Co.	23
Fruit Grower's Handbook	8
Hayne & Co.	9
Hingeston, C.	26
Hirsch, L., & Co.	9
Holmes, Chas. W.	1
Hunt, Leuchars & Hepburn, Ltd	17
Kimber, P. D.	26
Little's	10
Lennon, Ltd.	4
Lyle Brothers.	13

INDEX TO ADVERTISEMENTS.

	PAGE.
Malcomess & Co., Ltd.	(Cover—back, inside)
Mason & Son	16
Mayhew, John	17
McCrystal & Harkness	13
Merryweather, J., & Sons	13
Molassine Co., Ltd., The	2
Monhaupt, G., & Co.	22
Natal Direct Line	14
Natal Mill Elevator Co., The	21
Natal Soap Works, Ltd.	5
North, G., & Son	ii.
Otto, P.	26
Peters, J. A.	25
Pickstone, H. E. V., & Bro.	15
Raw, J., & Co.	iii.
Riekie & Co.	18
Rules of the Courts of Magistrates	23
Simmons, P. D.	(Cover—back, outside)
South African Fertilizers Co., The	i.
Steel Murray & Co.	12
Stephan's	18
Stewart & Lloyds	19
Wattle Extract Co., The	7
Wilson, J. M.	18
Wood, William	26

630.5.

NA

V. 11

no. 9

sent 25.

ADVERTISEMENTS.

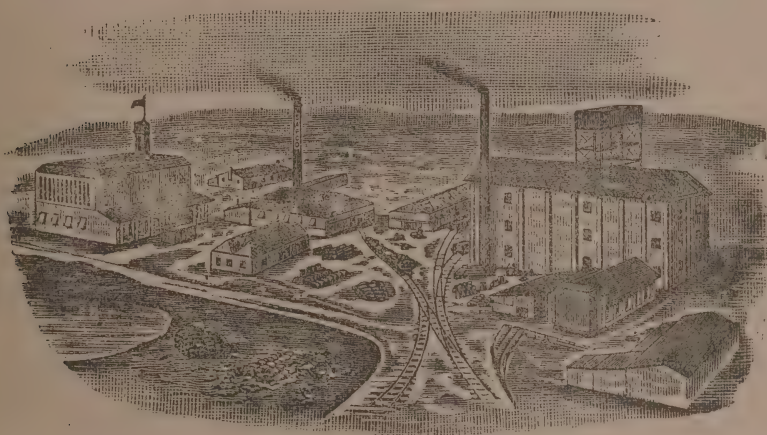
i.

SAFCO

- FERTILIZERS -

—ARE USED BY ALL—

UP-TO-DATE and PATRIOTIC FARMERS.



SAFCO WORKS, UMBILO.

SAFCO Fluid Dip.

SAFCO Powder Dip.

SAFCO Cattle Lick.

Vaporite.

THE SOUTH AFRICAN FERTILIZERS CO.,

TELEGRAMS : **UMBILLO, DURBAN.** TELEPHONE : **No. 26, Durban.**

Prizes at Johannesburg Show, 1908.

—AT THE ABOVE SHOW—

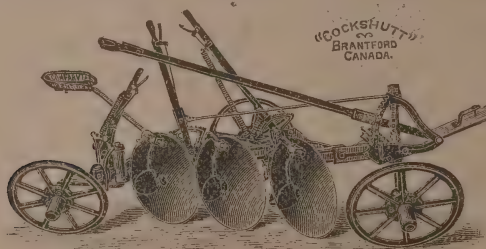
G. North & Son

were awarded 19 First Prizes and 5 Second Prizes for their

Agricultural Implements & Machinery

when competing against the leading Machinery Merchants; this constitutes a record for South Africa.

A Plowing Competition was also held, and again G. NORTH & SON were awarded both FIRST PRIZES for their famous "COLUMBIA" Gang Plows, when competing against the "Flying Dutchman," Howards "B.Z. Colonist," Deere's "Koodoo," the "Bass" and others.



The Celebrated "Canada" Disc Plough.

Can be had 1, 2, 3, 4 and 5 Furrow.

The only Disc Plough that has

NEVER BEEN BEATEN AT FIELD TRIALS,

and that will do your WINTER PLOUGHING.

—:o:—

Farmer's! What does this mean? It means and proves that G. NORTH & SON are the Leading Agricultural Implements and Machinery Merchants in South Africa. Do not forget to inspect their stocks or write for their Illustrated Catalogue and Price List.

Posted you GRATIS.

P.O. Box 916, P.O. Box 127, P.O. Box 493, P.O. Box 126,
DURBAN. MARITZBURG. JOHANNESBURG. PRETORIA.

Alex. Cross & Son's

(LIMITED)

FERTILIZERS.

HIGH GRADE SUPERPHOSPHATE.

ORDINARY SUPERPHOSPHATE.

~~WATER~~ BASIC SLAG.

DISSOLVED BONE COMPOUND.

POTATO GUANO.

ROOT GUANO.

BONE DUST.

STEAMED BONE FLOUR.

All of Best Quality . .

. . Prices Moderate.

WE GUARANTEE EXECUTION OF ALL ORDERS
BOOKED WITH US FOR COMING SEASON. . . .

J. RAW & Co.,

MARITZBURG

SOLE AGENTS FOR NATAL.

Friesland Pedigree Cattle.

**W. B. GRADWELL & SONS,
Holmesdale, Bloemfontein.**

Breed from the purest strains of U.S.A. Fries Cattle: Light framed and hardy, quality and quantity of milk splendid, hard to beat anywhere in South Africa.

PURE-BRED RED AFRIKANDER STUD CATTLE

of the purest strain, large frames and milking qualities a speciality. Prizes won at all S.A. Shows Orders booked for young bulls delivered F.O.R. Bloemfontein.

NEAT and STRONG.

MENDING BELTS and HARNESS

yourself is quite simple if you use
BIFURCATED RIVETS.

No need to punch holes. Simply drive Rivets and bend back the prongs. Assorted Boxes of all Storekeepers; if unobtainable, send 1s. P.O. or stamps to Bifurcated and Tubular Rivet Co. Ltd., Warrington, Eng. Price List on application

CURE AND PREVENTATIVE FOR WIRE WORM IN SHEEP AND GOATS

— AND —

Preventative for Tapeworm in Lambs.

BERT BOWKER'S CURE. Trade Mark—
A MERINO RAM.

At Last! A Certain and Safe Cure and Preventative for Wire Worm in Sheep.

Discovered by a South African Farmer.

A Powder Dose that has stood a three years' test, and proved absolutely right before offered to sheep farmers.

THE COST IS 3s. per lb., SUFFICIENT TO DOSE 64 FULL GROWN OR 90 SHEEP OF MIXED AGES.

Invest the trifle and save your sheep from this fatal disease. It is also a sure preventative for "Geel Ziekte."

All orders and enquiries receive the prompt personal attention of the Proprietor and Manufacturer,

Woodlands, P.O. Carlisle Bridge,
CAPE COLONY.

M. W. GRADWELL.

WATTLE BARK

MEALIES

AND . . .

NATAL PRODUCE.

We are Buyers for Spot Cash,

Wm. Cotts & Co.,

Natal Bank Buildings, DURBAN

Produce Merchants, Importers and

Exporters

Telegrams : "COTTS," DURBAN.

P.O. BOX 80, DURBAN.

“ROSEBUD”

. . FLOUR

IS

THE

BEST

FOR HOUSEHOLD USE

STRENGTH, WHITENESS AND QUALITY
. . UNSURPASSED . .

— TRY IT! —

. . Stocked by all Storekeepers . .

WM. COTTS & CO.,

IMPORTERS

P.O. BOX 80, DURBAN.

TO SOUTH AFRICAN FARMERS, SHEEP BREEDERS AND BUTCHERS.

A Common Disease of Sheep in South Africa which is often
the cause of serious loss both to the breeder and the butcher.

Nodular Disease

of the

Intestines in Sheep.

ITS NATURE, AND HOW IT MAY BE PREVENTED.

By Dr. Watkins-Pitchford, M.D.

(Assistant Government Bacteriologist, Natal).

PRICE : ONE SHILLING.

Post Free to any Address in South Africa, 1s. 2d.

— FROM THE —

'Times' Printing & Publishing Co., Ltd., Maritzburg.

A DISEASE which is quite common in sheep throughout the whole of South Africa, but which does not appear to have been hitherto recognised and described. It occasionally causes great mortality in a flock, and is one of the reasons why Sheep cannot be satisfactorily raised in some localities.

Butchers and Breeders in South Africa have long been familiar with the appearance, in the intestines of slaughtered sheep, of little lumps of what they believe to be sand or flint embedded in the gut. In some parts of the country every sheep slaughtered is found to have these deposits, in greater or less numbers, in the intestines. When they are present even in small number the gut is quite unfit for the making of sausage skins; when they are present in large numbers the flesh of the animal is found to be so poor as to be hardly saleable.

In this pamphlet, which is illustrated by photographs, the exact nature of the disease is clearly described, how it is contracted and how it may be prevented.

A knowledge of the true nature of the disease is of great importance both to those who raise Sheep for the meat market and to Butchers.

Scab! Scab!! Scab!!!
is a
Terribly Infectious Disease
requiring a
Thorough Remedy
Cooper's Dip
for 60 years has proved itself
The Most Perfect Cure
Thoroughly Safe
and Very Cheap
Most Lasting
Sold by all Storekeepers.

Vol. XI., No. 9.

SEPTEMBER 25, 1908.



. . . THE . . .
NATAL
AGRICULTURAL
JOURNAL

Published for and Edited in the Department of
Agriculture.

Publishers :

THE "TIMES" PRINTING AND PUBLISHING COMPANY, LIMITED.

—
1908.

CONTENTS.

	PAGE
AGRICULTURAL CONDITIONS IN AUGUST : The Weather, Crops and Live Stock...	1191
AGRICULTURE AND FORESTRY, DIVISION OF : Administrative Report for 1907-8	1141
AGRICULTURE, THE PROGRESS OF : By William Saunders, C.M.G., LL.D. I.	1131
ANGORA GOATS, EXPORT OF	1081
BLOOD MANURE : By Alex. Pardy, F.C.S., Analyst	1127
BUTTER BOXES MADE OF STRAW	1107
CAPE FRUIT INDUSTRY : Progress in 1907-8	1129
CATTLE DISEASE, NEW, THE ALLEGED	1074
COAL AND LABOUR RETURNS	1199
CO-OPERATION IN THE POULTRY INDUSTRY : Suggested Organisation in Natal	1154
CORRESPONDENCE :	
A Curious Case : " Mooi River " ; Points for Discussion : L. Robinson ;	
Wireworm and Bluestone : " Young Colonist."	1189
CREAMERY, MODERN, THE ESTABLISHING AND CONTROL OF A	1138
CROPS, THE WORLD'S	1126
DEPARTMENTAL NOTICES :	
Diamond Drilling	1211
E.C.F. Advisory Committees	1205
Employment Bureau	1204
Experiment Station Notices	1212
Government Abattoirs and Cold Stores	1214
Lungsickness and Scab, Farms under Licence for	1200
Publications Issued by the Department	1215
EAST COAST FEVER ADVISORY COMMITTEES	1075
EAST COAST FEVER AND THE CAPE BORDER	1076
EAST COAST FEVER REGULATIONS	1080
EGG SUPPLY, THE LOCAL	1075
ENTOMOLOGIST'S OFFICE : Notes of the Month	1161
EXCHANGE REVIEWS : What Others are Thinking and Doing	1184
EXPERIMENT FARM REPORTS	1168
EXPORT OF NATAL PRODUCE : Potatoes, Lambs and Apples	1108
FARMERS, AMONG THE : The Associations during the Month	1171
FARMERS' ASSOCIATIONS, EXECUTIVES OF	1208
FIBRE MACHINERY : Notes for Intending Purchasers	1135
FORESTS OF ASIA : How they are Conserved.	1103

CONTENTS—continued.

	PAGE
FRUIT FACTORIES, SUPPLIES FOR	1082
FRUIT INDUSTRY, CAPE : Progress in 1907-8	1129
GARDENING NOTES FOR OCTOBER : By W. J. Bell, Nurseryman, Seedsman and Florist, Maritzburg	1187
HAMS AND BACON, TAINT IN : By Loudon M. Douglas	1097
HORSES, AGE OF, TO TELL THE... ..	1153
INDIANS, INDENTURED, PASSES FOR	1082
LAND BOARD, NATAL : Monthly Meeting	1167
LOCUST FORECAST—1908-9. By Albert Kelly	1161
MANURE, BLOOD. By Alex. Pardy, F.C.S., Analyst	1127
MARKETS, THE : South African and Oversea Notes and Prices	1192
MEALIE EXPORT	1079
MEALIE MEAL FOR LONDON	1073
MEALIES (SEED) REQUIRED	1073
METEOROLOGICAL RETURNS	1202
NOTES AND COMMENTS	1073
PEACH APHIS	1165
PHOSPHATES IN NATAL : By Herbert Ingle, B.Sc., F.I.C., F.C.S.	1083
PHOSPHATES, NATAL MINERAL	1074
PHOSPHATES, NATAL MINERAL : By Alex. Pardy, F.C.S., Analyst	1090
POULTRY-KEEPING IN A SIMPLIFIED EDITION FOR FARMERS By F.C. (<i>continued</i>)	1100
POULTRY INDUSTRY, CO-OPERATION IN THE : Suggested Organisation in Natal	1154
POUND NOTICES	1203
"PROGRESS"... ..	1071
RAILWAY RATES ON S.A. PRODUCE	1158
STALK-GRUB AND THE CUT-WORM, THE : By J. H. Lilienthal	1093
TIMBER FAMINE, THE COMING	1077
WATTLE BARK, PRODUCTION AND UTILISATION OF : Sources of the Bark and Manufacture of Extract	1120



A PROMISING JAPANESE PLUM.

THE NATAL AGRICULTURAL JOURNAL

Of Special Interest:

NATAL MINERAL PHOSPHATES.

BLOOD MANURE.

TAINT IN HAMS AND BACON.

THE FORESTS OF ASIA.

POULTRY KEEPING FOR FARMERS.

CO-OPERATION IN THE POULTRY INDUSTRY.

DIVISION OF AGRICULTURE & FORESTRY—ANNUAL REPORT.

Notes and Comments.—Notes of the Month.—Among the Farmers.—

Exchange Reviews.—The Markets.—Gardening Notes.—

Weather, Crops and Live Stock, etc., etc.



PRINTED AND PUBLISHED FOR THE DEPARTMENT OF AGRICULTURE
BY TIMES PRINTING AND PUBLISHING COMPANY, LTD.,
PIETERMARITZBURG.

SUBSCRIPTION:

FIVE SHILLINGS per annum (in advance), post free.

*It is hereby notified that all matter contained in the
Natal Agricultural Journal
is protected by Copyright. Newspapers desirous of
republishing any articles may do so provided the usual
acknowledgment be made.*

The Journal may be obtained from the Publishers, THE TIMES
PRINTING AND PUBLISHING COMPANY, LIMITED, MARITZBURG, NATAL,
upon payment in advance at any time of an Annual Subscription of 5s.
With the exception of the Portuguese Colonies, the Journal is franked to
all parts of South Africa. Postage to England, 2s. 6d. per Annum extra.
Business Communications to be addressed to the Publishers.

The Journal is issued on the last Friday of every month.

Literary Communications to be addressed to the Editor, "Agricultural
Journal," Department of Agriculture, Maritzburg.

Matter for advertisements or alterations in standing advertisements must
be sent to the Publishers not later than the 18th of the month.

The Natal Agricultural Journal.

Progress.

“PROGRESS” is still the order of the day in regard to the export movement in this country—still reports are coming in indicative of our possibilities in the oversea markets, and still success is meeting the efforts which are being made, both by the Government and by private individuals, to foster the export of our produce—mealies, fruit, potatoes, meat, etc. We firmly believe in Natal’s agricultural possibilities; and, what is more, we firmly believe that there are few other countries in the world to equal Natal in regard to those possibilities. But we want a progressive spirit among our farmers, and we want organisation. Our agricultural societies could play an important part in the development of the country; but the chief thing that militates against this is low membership, and, as a result, lack of funds. We would urge every farmer to join the agricultural society of his district, to take a thorough interest in its doings, and to attend all its meetings. Then we would urge upon the oldest and most experienced members of the associations to see that a healthy, progressive atmosphere pervades the societies’ meetings, and also from time to time to draw members’ attention to the need for organisation—for the adoption of co-operative principles in their methods of farming.

We have many possibilities, and the sooner farmers realise this and realise also the success which is attending the Government’s efforts to foster the exportation of Natal produce to oversea markets, the sooner will Natal be lifted out of the depression in which she is at present sunk. Our immediate hopes in the matter of fresh exports, lie in mealies and fruit, and the prospects of potatoes and meat are also good. We would direct readers’ attention to the report which we publish in this issue of the meeting of the Rosetta Co-operative Association, early in the month,

at which Mr. Deane was present: this will show how matters stand in regard to the export of potatoes, meat, and apples. In regard to the exportation of mealies, Mr. Deane has received an interesting letter from Mr. A. H. Rennie, of Durban, drawing attention to the increasing favour which Natal mealies are meeting with in England and on the Continent. Apart from the excellence of Natal mealies themselves, there is no doubt that we owe a great deal of our success to the system of grading which was inaugurated by Government last year at the outset of the export scheme, and thus we have a first-hand illustration of the value of proper inspection of produce intended for export. Some objection was raised to the adoption of a scheme of inspection when the Government last year published particulars of its proposed grading scheme, and again as recently as April last—at the Annual Conference of the Natal Agricultural Union—an endeavour was made indirectly to obtain a repeal, or at least an extensive modification, of the existing inspection system. Most of the original objectors, however, must now see the value of careful inspection of grain intended for export, especially when such grain is to be sold “on sample”: and Mr. Rennie’s letter to Mr. Deane gives evidence of its value. Mr. Rennie writes:

It may interest you to see the market report that we have received from our London house by this mail, and I am also pleased to be able to tell you that we got a cable from them last week saying that several large parcels of mealies belonging to friends here that we had sent to them for sale, had been sold at 29s. and 29s. 6d. a quarter in London. This, I think, is almost a record price; and all our advices from Home are to the effect that the Natal mealie is steadily gaining favour, and that, on account of its dryness and there being no loss of weight, it is being much preferred by importers to maize from either the Argentine, United States or the Danube. We are also advised that when the Natal mealie is used for manufacturing purposes it is much superior to maize from other parts.

Since this letter was received the Minister of Agriculture has had further advice from Mr. Rennie of the sale of Natal mealies in London at the very high price of 30s. 3d. per quarter—a price which is rarely touched by mealies from other parts of the world.

In his letter Mr. Rennie refers also to the export of potatoes, dealing particularly with freight. Messrs. Rennie & Sons’ freight for potatoes in cases from Natal to London is 22s. 6d. per ton of 40 cubic feet or 30 cwt. at ship’s option, with 10 per cent. primage (which rates include shipping); and Mr. A. H. Rennie remarks:

I really think Natal farmers cannot possibly complain of the rate quoted. We get thousands of tons annually from the Canary Islands to London, five days steaming, at 15s., and this is competing in an absolutely open market. From the Islands to here we get 37s. 6d. per ton, so I think the rate of freight from Natal to London of 22s. 6d. including shipping is a very reasonable one. Potatoes need to be very carefully handled and stowed, and should not be shipped in larger quantities than 200 tons in any one hold, and great care must be observed in their stowage to see that there is plenty of ventilation between the cases. Of course, this all means loss of space to the ship, but we do not grudge that, provided we can deliver in good order.

It would, however, greatly facilitate matters if the shipping companies could see their way to making a reduction in their freight rates. The Minister of Agriculture has promised—in the speech at Rosetta—that a reduction to 8s. 1d. per ton for 20-ton lots would be made on our railways; and with such helps as this, and given an organised effort on the part of growers and the shipment of potatoes suited to the requirements of the London market, there is no reason why the export of potatoes should not become a success and eventually assume large proportions.

Notes and Comments.

Seed Mealies Required.

Attention is drawn to the notice which appears among the Experiment Station Notices at the end of this issue asking for sellers of selected seed of certain types of mealies to communicate with the Director of Experiment Stations. The Director is desirous of getting in touch with growers who may have selected Horse Tooth, Hickory King, Boone County, Golden King, and Yellow Dent seed for sale, and they are invited to write to him as early as possible.

Maize Meal for London.

A letter has been received by the Minister of Agriculture from the Commercial Agent in London (Mr. Francis Harrison), suggesting that an experiment might be made in the direction of organising an export trade in Natal maize meal with a view to bringing it before the public in London. As Mr. Harrison remarks, maize meal is one of the most sustaining articles of food, and is said to be superior to oatmeal, Quaker Oats, and such largely advertised preparations as "Grape Nuts," "Force," etc. If the article were properly advertised, and done up in packets in the same manner as "Quaker Oats," "Force," etc., with full directions as to cooking, it is very probable that we should soon have a very large market for the meal. Nothing definite has been arranged yet, but the Department of Agriculture is considering the matter with a view to arranging for the consignment of a few bags to London, where the meal would be put up in small packages and distributed to the best advantage. Consideration is also being given to the possibility of creating an export trade in samp, or, as the Americans call it, hominy. This makes a very palatable breakfast dish, and when once it secures footing on the London market it should rapidly gain in popular estimation.

Natal Mineral Phosphates.

The attention of our readers is drawn to the two interesting articles which appear in this issue on the subject of the recent discoveries of mineral phosphates in Natal. Phosphates form the chief manurial requirement of most of the soils in this Colony and when we add that the mineral is to be found over large areas in Natal, the importance of the discovery which has been made will be realised. The Mines Department has been closely associated with this discovery. In January last a mineral sample was sent to the Commissioner of Mines for an expression of an opinion as to the quality of the mineral which the sender supposed it to contain. The sender's supposition was found to be a mistaken one, as, upon being tested by the Commissioner, the sample was discovered to be phosphatic. The sender was so informed, and later the result of a quantitative analysis made by the Government Chemist was communicated to him. The discovery proved to be situated on the Weenen Town Lands, which, in order to allow of the working of the deposit, were brought under the operation of the Mines Act by Proclamation published on the 28th May last. J

The Alleged New Cattle Disease.

In connection with our note in the last issue of the *Journal* (page 944) regarding the alleged appearance of a new cattle disease in Mozambique, the following from the Lourenco Marques *Guardian* of the 20th August will be read with interest:—"As announced a few days ago, Dr. Theiler, the celebrated bacteriologist, has gone north to investigate into a new and mysterious disease which has caused great damage to stock in parts of Mozambique. The exact nature of the new scourge has not yet been made fully public, but its effects in the neighbourhood of Chai-Chai and elsewhere, where many valuable cattle have been lost, made a thorough inquiry into its causes imperative. With the help which can be given by our own experts and by Dr. Theiler, however, it is to be hoped that stock-breeders and others interested in cattle will shortly have placed before them information which will enable them to prevent, if not to cure, the disease. It is reported that stock in parts of northern Rhodesia have also suffered through a malady similar to that which Dr. Theiler is now investigating, a circumstance which seems to show that unless proper precautions are observed, we may have further trouble in other places where cattle are bred. To the layman, the most astonishing part in connection with the whole matter is that the cattle are supposed to have become infected not through the bites of the tsetse fly or mosquitoes, but through the ordinary house fly. That house flies can under certain conditions carry disease to human beings has long been known, but hitherto they have not been regarded as dangerous to domestic animals. Not Mozambique alone, but the other Colonies of the sub-continent will await the report of the experts with interest."

E.C.F. Advisory Committees.

Readers will probably have noticed, in last month's *Journal*, that a full list of the East Coast Fever Advisory Committees was published for the first time. This list is repeated in the present issue, and will appear each month in the same way as the list of executives of Farmers' Associations which we have been in the habit of publishing. As will be seen, the list of Advisory Committees gives the names of the Chairman and members in each case, and also defines the districts and sub-districts.

The Local Egg Supply.

Lately eggs have been coming on to the markets in large quantities, this being the plentiful period of the year, and the result has been, of course, low prices, ranging from about 8d. to 1s. 2d. per dozen. Whilst the time of the year has much to do with the plentiful supplies, the increasing interest which is being taken in poultry rearing is having a considerable influence. What we want now is organisation, and in this connection we direct readers' attention to the excellent suggestions which Mr. Tinson puts forward in the paper on co-operation in the poultry industry to which we give extended notice elsewhere in this connection. Mr. Tinson's idea is that a number of district co-operative egg societies should be formed in the Colony for the purpose of collecting eggs from farmers and poultry keepers in each district, grading and testing these eggs and forwarding them to the best markets. These district societies would be affiliated to a central organisation which would "exist as advisory, filling the necessary requirements in the way of development, instructing, organising, and giving strict attention to the markets and the bringing of producer and retailer into closer touch." The poultry industry is now certainly in need of some organisation, in order that the best returns may be obtained from the possibilities which the Colony possesses. For this purpose Mr. Tinson's suggestions are excellent and we commend them to the attention of our readers.

We would remind poultry keepers that close attention to methods of marketing have an appreciable effect upon prices realised for eggs. Eggs that are clean in appearance, are properly graded, and are neatly packed, always command higher prices—to the extent, locally, of threepence to sixpence a dozen more—than second-rate produce; and those who will realise this, and give effect to it, will find that the little extra time and trouble involved will be amply rewarded. As regards farmers who have large supplies of eggs we cannot do better than quote a suggestion made by the *South African Poultry Journal* in its issue of the 4th September, with regard to the preservation of eggs. The *Journal* says: "We would recommend those who have large supplies of eggs to adopt some method of preserving them until prices improve."

There are many ways, of a more or less satisfactory character, in which this can be done, but we do not think there is anything to beat water glass for this purpose, and we have read of well authenticated cases in which eggs have been found to be almost if not quite equal to 'new laid' after 12 months immersion in the solution, whilst they have been found quite eatable after much longer periods. One fact, however, must be borne in mind that whatever plan is adopted, it is no use attempting to preserve any but absolutely fresh eggs, as especially in a climate like ours the process of decomposition soon sets in. We have in our possession a report by the Aberdeen and North of Scotland College of Agriculture on this subject which we regret not to be able to insert in full, but the following is the last paragraph, which gives the gist of the conclusions arrived at:— 'We may therefore conclude, says Mr. J. Hendrich, who carried out the experiments, that the composition of eggs is practically not altered by preservation in water glass for a moderate period, such as a year. Even when preserved for a much longer period the changes in composition which take place are very slight, and are not such as to render the eggs useless or objectionable as food.'"

East Coast Fever and the Cape Border.

In order to prevent the spread of East Coast Fever from Natal into the Transkeian Territories, a belt was established by the Cape Government on the 5th February last, by Proclamation No. 56 1908—which was amended by Proclamation No. 82, 1908—along the boundary of those Territories, within which horned cattle were only permitted to enter for certain purposes; on the 1st June the north-eastern border of East Griqualand extending from the Basutoland Border to the junction of the Umzimkulu River with the Ibisi River was exempted from the operation of these Proclamations; and another Proclamation has now been issued (No. 369 of 1908) further amending those Proclamations. Notwithstanding anything contained in those Proclamations, the strip of land along the Natal Border extending from the junction of the Umzimkulu River with the Ibisi River to the source of the Umtamvuna River, and contained within the limits of eight hundred yards from the Border, will no longer be regarded or maintained as a belt of country for the purposes and within the meaning of Proclamations 56 and 82 of 1908, and in place thereof the strip of land contained within the double fence erected along the Border has been established as a belt of country from which all animals, with the exception of (a) horses of the Cape Mounted Policemen patrolling the Border fence and (b) equines used for hauling wagons through the ports of entry established at Harding Gate and Ingeli, shall be removed and shall not be permitted to enter, and in which no cultivation shall be allowed.

In accordance with a proclamation recently issued by the Cape Government, all cattle found to have crossed the Border from Natal are liable to be shot by the guards, and the Natives resident in the Lower Umzimkulu, Alfred, Ixopo, and Polela Divisions, near the Border, have been warned accordingly by the Magistrates. In connection with this proclamation the Natal Minister of Agriculture recently telegraphed to the Secretary for Agriculture at Capetown stating that he had been informed that on the river boundary between Natal and Cape territory cattle were being destroyed as soon as they entered the river, and that at one place, where there is an island in the river, cattle were being shot on that island. Mr. Deane pointed out that no animals should be destroyed until they had actually landed on Cape territory, and he asked that instructions might be issued accordingly to the Cape officers stationed on the Border. To this request the Cape Authorities replied by telegraph as follows: "Officers commanding Border Guard all report no Natal cattle shot as soon as they enter river. All guards under strict orders only shoot cattle when they have actually crossed on to our bank, and if they see Natal cattle in act of crossing to use best endeavours to drive them back before they reach our side. Cattle shot on island did not belong Natal, but jumped fence from this side. If you can quote any specific instance of Natal cattle being shot as described thorough investigation will be held."

The Coming Timber Famine.

A correspondent (Mr. Angus Cameron) writes an interesting letter to the Editor of the *London Times*, in which he draws attention to the serious position which will shortly be created as a result of the rapid depletion of the great timber forests of the world—at any rate, of those which are at present being used for commercial purposes. He points out that a time of scarcity is approaching much more rapidly than most people suppose—he places the time of scarcity at 25 to 30 years. At the present rate of consumption he says that the United States supply will certainly be exhausted in about that time, and Canada, with the United States drawing on it from now onwards, cannot hold out much longer. All the most accessible timber on the shores of the Baltic also has been used up and the interior supply will be gone in less than 30 years.

Mr. Cameron considers that the two most likely regions to be looked to as a future source of supply are the Amazon and the Uganda Protectorate. Of these two sources, he considers the latter the better, for various reasons. "To get this timber from Uganda into the British market at a reasonable price," he remarks, "it means that experience and energy must be put into it. Boys from school cannot do this. Woodcraft can only be learned in the woods. The very best skilled lumbermen of the broad-gauge type must go into this business along with the investors' money if a profit is to be made."

"I was very much amused," Mr. Cameron proceeds, "on reading an article by Mr. Winston Churchill in the *Strand Magazine* lately describing the primitive methods employed to supply the Uganda Railway with cordwood for fuel. I quite agree with him that modern methods must be introduced if this Uganda timber is to be used as a commercial asset of the Protectorate; logging railways must be built, steam logging machines introduced, and modern up-to-date band-saw mills constructed. Steam, electricity or compressed air are much more serviceable than a lazy nigger. On one point I must differ from Mr. Churchill, and that is about the use of the 'steam tree feller.' In such a forest as he describes it would cost more to clear a way for the feller than it would do to cut the timber by manual labour. To give a start to the timber business in Uganda it would be necessary to man the woods and mills at first with skilled white labour and by this means gradually educate the young natives. The young natives can be trained up to good useful woodsmen, but the old ones never. At least this has been the writer's experience in the Black belt of the Americas. The old ones sooner or later return to their banana or cotton patches, but the young ones, reared around the mills and woods, usually stay with the plant. There is a large area of timbered country that is at least comparatively healthy and suitable for white settlement and should be the first part to be developed. This region is known as the Mau Escarpment, and lies between Lake Naivasha and the Kasova Hills on the eastern shore of the Victoria Nyanza. This forest can easily be reached by logging railway from the existing Government railway, and with proper appliances and skill the timber could be placed on board ship at Mombasa at about 12d. per cubic foot. This is provided the rates on the Uganda Railway are reasonable. Steamers of, say, 6,000—8,000 tons can carry it to London or other British ports at 4½d. per cubic foot. In all about 1s. 4½d. c.i.f. the Thames, the price of pitch pine, but in less than ten years the price of pitch pine will not be less than 1s. 10d. per cubic foot c.i.f. British ports.

"I estimate the timber of Uganda at 40,000 square miles, that is to say 25,600,000 acres, which at 1,000 cubic feet per acre would yield 25,600,000,000 cubic feet in all. Why should this enormous forest be allowed to rot on the stump when you need the timber so much at Home? It is a self-evident fact in a forest that is perpetuating itself that it decays as fast as it grows, and we know that this decay and growth is about 40 cubic feet per acre per annum, hence there is 1,024,000,000 cubic feet rotting in the forest of Uganda every year. For the benefit of the general reader I may state that this annual decay of timber would, if converted into sleepers, be sufficient for 170,000 miles of single track railway, and all this without injury to the forest. To encourage capital to this business the timber would require to be sold in large areas, say

50,000 to 100,000 acres. It would take this amount of timber to justify timber companies going to the expense of building railways, steam-logging appliances, and large modern band-saw mills. A plant of, say, 10,000 cubic feet daily capacity would be required to be assured of a ten or fifteen years' supply, to justify the expense; and, as far as I can learn, the forest laws of Uganda would have to be rearranged to meet those requirements and before people could be induced to risk their money in the business. The Government should send some practical timbermen and foresters out to report on this field and to draw up common-sense laws for the exploitation and conservation of the forests. Here within the Empire you have timber enough to supply all your needs until you can grow your own at home."

Maize Export.

The figures relating to the export of Natal maize oversea since the beginning of the year, published by the S.A. Customs Statistical Bureau, are very gratifying. Up to the end of August 258,105 muids had been shipped, as compared with 39,458 muids during the same period of 1907. The value of this grain was £110,678 and £14,119 respectively. The new season's grain commenced to arrive at the Point in May, and at the end of July 104,000 bags had been shipped (including that to Cape ports), as follows (we are indebted for these figures to the General Manager of Railways): To Cape ports, 49,000 bags; Continental ports, 41,000; Australia, 9,000; London, 3,000; Canary Islands, 2,000. The largest single shipment effected so far was per s.s. "Dover Castle," which sailed on the 23rd July, and took 21,000 bags, principally for Antwerp and Hamburg. The General Manager states that the bulk of the maize has been shipped by steamers of the Union-Castle Coy. (which firm maintains a weekly service to Cape ports and London) along with a bi-monthly service to Continental ports, by means of intermediate steamers. Very little grain has been shipped by steamers of the Rennie and Bullard-King lines (which firms between them maintain a weekly service to London). There appears to be an increasing demand for South African maize in Germany and Holland, where it is used extensively in the manufacture of spirits.

There has been a great increase noticeable in the quantities of grain from Transvaal and Orange River Colony stations. While 2,000 bags were received from these Colonies during May, June and July, 1907, no less than 65,000 bags have been received for the corresponding months this year; the principal sending stations at present being between Volksrust and Germiston; between Klerksdorp and Bethal, in the Transvaal; and stations between Harrismith and Bethlehem, particularly Tiger River and Heilbron, in the Orange River Colony. No grain has so far been

received from stations on the Basutoland Border, *i.e.*, on the Bethlehem-Modderpoort line. There is thus a tendency apparent towards decrease of traffic from local stations, this being no doubt due to a later season. It is, however, anticipated that as the season progresses there will be a much larger volume of maize from Natal stations, the principal of which at present sending maize are Camperdown, Umhlang Road, Richmond, Los Kop, Winterton, Cato Ridge, Thornville Junction, Harrison. Maize from the Coast lines is, as a rule, received in small lots. The Government Grader states that the maize this season is of a much better and more uniform quality than last year, and that the grain is being packed in a better class of bag. There have furthermore been no instances of weevil maize this season, and there have so far been only two cases of the grain having been packed too soon.

The General Manager states that it has not been possible to obtain any reliable information regarding the probable volume of traffic this season, although several of the larger firms have been approached. None of these firms, however, care to hazard an opinion on the subject. Conversations with men from various up-country districts have elicited many contradictory opinions, and it is apparent that we shall have to await developments and make arrangements to overtake any large increase of traffic as it is forthcoming.

East Coast Fever Regulations.

Two Government Notices have been issued ordering that no movement of cattle within the Magisterial Divisions of Umvoti and New Hanover, respectively, shall be allowed. Notwithstanding this prohibition, however, healthy cattle may be moved from one place to another within the Division, for immediate slaughter, on permit granted by a member of a District Committee for the Division concerned, or by a person appointed by such Committee as a Permit Officer, and such removal must be made within the time and according to the directions contained in the permit and not otherwise. Permits for the removal of slaughter cattle by rail from any railway station in either Division must be obtained from the Minister of Agriculture, and will be issued subject to such conditions as he may see fit to impose.

Under Government Notice No. 506, 1908, the Minister of Agriculture has declared that the portion of the farm Wellington, lying to the west of the Main Line of Railway, the portion of the farm Springvale, lying to the west of the Main Line of Railway, and Rosetta Railway Station, all in the Lion's River Division, shall, for the purpose of the East Coast Fever Act, be deemed to be a portion of the Magisterial Division of Estcourt, and all restrictions or regulations which now or

hereafter may be in force in the Magisterial Division of Estcourt will, in like manner, be in force as regards the said portions of farms and Rosetta Station. Under Government Notice No. 507, the Minister has declared the Richmond railway line, in the Division of Camperdown, from the point where that railway line crosses the western boundary of the farm Lilliefontein to the junction of the said railway line with the main line of railway, to be a fixed Quarantine Boundary, and has prohibited the removal of all cattle from one side to the other of the Richmond line.

An order has been issued by the Minister of Agriculture (Government Notice No. 508, 1908), for all cattle in Sub-division No. 1 of the Magisterial Division of Newcastle, known as the Charlestown-Ingogo district, to be branded on the right shoulder with the district brand, "C.I." This order is to be carried out, at their own cost, by the owners of cattle or the persons in whose possession or charge the same may be, under the supervision of the Advisory Committee for the Charlestown-Ingogo district of the Division of Newcastle. Attention is specially drawn to Section 13 of Act No. 32, 1903, which provides that on failure to obey this Order, the same may be carried out by the Government at the cost of the said owners or persons in possession of or in charge of cattle, and to Section 20 of the said Act, which provides punishment for disobedience of this Order with a fine not exceeding £100 or to imprisonment, with or without hard labour and with or without the option of a fine, for any term not exceeding six months.

The district in question is bounded as follows:—From the main line of railway where it strikes the southern boundary of the farm Clontart West, along the western boundary of the said farm, thence along the south-western boundary of the farm Tipperary West, thence along the southern boundaries of the farms Hamstead, Dumferline, and Roodepoort, thence along the northern side of the Botha's Pass main road to where it joins the Orange River Colony border, thence along the Border of the Colony, thence along the Charlestown fence to where the said fence joins the main line of railway near Mount Prospect gate, thence along the main line to the southern boundary of the farm Clontart West.

Export of Angora Goats.

A Bill "to amend the law relating to the export of Angora goats" has been passed by Parliament this Session. The Bill repeals the Angora Export Duty Act of 1901, and prohibits the export from Natal of any Angora ram or ewe except to such Colonies or territories in South Africa as may have similar legislation in force. The penalty for contravention of the provisions of the Act will be imprisonment with or without hard labour for a period of from one to two years.

Supplies for Fruit Factories.

We have received the following communication from a large firm, in Natal, of manufacturers of jams and other fruit preserves:—"We are constantly hampered in our business for the want of certain kinds of fruits which we find almost impossible to buy in sufficiently large quantities in the Colony to make it worth our handling. We refer to strawberries, apricots, figs, currants, raspberries, more especially. Our rivals in the Cape Colony seem to have large quantities of these, and in consequence we are seriously at a disadvantage. We would be glad of your assistance in putting us in touch with growers of these fruits or any particular one of them with a view to business during the coming season." We shall be glad if those farmers in Natal who may have sufficiently large quantities of the fruits to which our correspondent refers will kindly write to us and we will place them in communication with the firm in question.

The following note appeared in the *Daily Telegraph* (London), on 25th July:—"Our orange supply is not limited to Italy at the moment. We are receiving some excellent samples from South Africa, which is also providing us with the Natal naartje or mandarine. Both of these are most acceptable at a time like the present, when the orange supply is short. Of course, high prices prevail, but that is always to be expected when supplies are short. In any case the fruit is worth a trial, being well flavoured and full of juice."

PASSES FOR INDENTURED INDIANS.—The following rules, made by the Indian Immigration Trust Board have been approved by the Governor in Council: (1) No employer of Indians shall grant a pass for a longer period than ten days to any indentured Indian in his employ without the special sanction of the Protector, given in writing. No such employer shall grant a pass to any indentured Indian whose term of service has expired otherwise than as provided by the rules framed by the Indian Immigration Trust Board for giving effect to Act 17, 1895, and 2 of 1903, viz.: (a) to return to India; (b) to seek employment; (c) to take out a license. (2) Any employer or other person contravening the foregoing Regulation shall, upon conviction before any competent Court, be liable to a penalty not exceeding £2 (Two Pounds Sterling) for each offence.

Phosphates in Natal.

By HERBERT INGLE, B.Sc., F.I.C., F.C.S.,

Late Chief Chemist, Transvaal Department of Agriculture, Author of "A Manual of Agricultural Chemistry" and "A Primer of Agricultural Chemistry."

FROM an extended study of the chemical composition of the soils of South Africa I have shown that the great manurial needs of our soils are phosphates, lime, and in some cases nitrogen, while the other main item of plant food—potash—is only in rare cases required by our soils.

Of limestone, there are many excellent deposits in the Transvaal and elsewhere, but of phosphatic deposits but few have been discovered, and the progressive farmer has had to rely almost entirely upon bones, imported superphosphate and imported basic slag as sources of the much-needed phosphates.

Bones, of which the supply is limited, though they have the advantage of also supplying nitrogen, are unfortunately somewhat slow in their action, and basic slag, though giving excellent results on some soils, is also slow in action on soils poor in organic matter, as many African soils are.

Much quicker results follow the use of superphosphate, especially on soils containing a fair amount of carbonate of lime, and superphosphates are undoubtedly the quickest in action and most satisfactory of all phosphatic manures. But to obtain the best results the soil unless already supplied with calcium carbonate, should have a dressing of lime some few weeks before the application of the superphosphate.

Though superphosphate produces such marked results on most of our soils, its high price, consequent upon the expense of its freight and transport, renders its employment of doubtful value in many districts, for while, in general, an enormous increase in yield of crop would follow its use, the value of the increase might not be great enough to defray the high cost of the manure.

I have repeatedly called attention to these points in the *Transvaal Agricultural Journal*, in the Reports of the South African Association for the advancement of Science, in various Annual Reports of the Transvaal Agricultural Department and elsewhere, and have pointed out the desirability of finding any source of phosphoric acid to serve as a substitute for the expensive imported superphosphate and basic slag. It was therefore with great interest that I heard from Mr. P. D. Simmons of Bray Hill, Mooi River, of the discovery of important deposits of phosphatic material in the neighbourhood of Weenen, Natal, and gladly undertook to examine and report upon the discovery.

I now give a short account of the results of my inspection of these deposits, followed by a description of the composition of the samples collected and examined by me, and, lastly, a few suggestions as to the manner in which the deposits might be utilised.

INSPECTION OF THE SITE.

In July, 1908, I visited Weenen with Mr. Simmons and inspected the land on which the deposits occur.

The area is very large, and much of it is intersected by many "dongas" or dry water courses. Lying in the dongas and protruding from the shales which form the walls were large numbers of concretionary or nodular pebbles varying in size from a few pounds each to a hundred pounds or more in weight.

It is impossible to form any reliable estimate of the amount of nodules actually in sight, but the quantity is certainly enormous and sufficient to meet any demand for phosphates in South Africa for many years to come.

In addition to the embedded nodules the soft shale contained many beds of hard rock consisting of phosphatic shale, some of which might serve as a source of manurial material.

On Claims I. and II., lying within a short distance of Weenen Township, about a mile from the Railway Station, the nodules exposed were very numerous, while on the next claim, No. III., doubtless because dongas were few, the amount of exposed shale and nodules was much less. No doubt they exist but are here covered by surface soil.

On Claim IV. dongas occurred again, and many nodules were again in sight. On this claim we observed a mass of what was apparently fossilized wood, which proved to be both phosphatic and siliceous.

Claims V. and VI. and Kafir Kraal Claim, more distant from the railway, were also inspected and were well supplied with nodules, while on Claim VI. beds of limestone, in many cases bordered by a crust of phosphatic material, were noticed.

These limestones might be useful in manufacturing superphosphates for imparting porosity to the product.

The impression I gained by my inspection was that on Claims I. and II. and on Kafir Kraal Claim there was sufficient material chiefly in the form of nodules, and thus extremely easy of collection, to supply the needs of South Africa so far as phosphates are concerned, for many years to come while doubtless by slight excavation large additional supplies could be uncovered.

The deposits are within easy reach of roads and not far from Weenen Railway Station.

Samples of the various types of deposit were collected and were subsequently analysed by me in the Laboratories of the South African Fertilizers Company, to whose manager, Mr. A. M. Neilson, I would here

express my indebtedness for the facilities he so kindly afforded for carrying out the analyses.

ANALYTICAL RESULTS.

The samples were prepared for analyses by thorough grinding until the whole passed a sieve with 60 meshes to the lineal inch.

A. "Soft Wood" phosphate. A brown substance found in tree form on the claim known as "Back of Walters," near Furrow Station.

The results of the analysis gave—

	Per cent.
Moisture	1.5
Loss on ignition	3.6
Insoluble matter	0.2
Total phosphorus pentoxide	37.1
Chlorine	0.3
Lime	62.0
Iron and aluminum phosphate	4.3
Carbon dioxide	1.6

According to the usual assumption this corresponds to—

Total phosphate of lime	80.9
Iron oxide and alumina	2.1
Fluorine (by difference)	10.6

B. Sample IV. Reddish grey nodule from Claim II.

Moisture	0.5
Loss on ignition	2.8
Insoluble matter	22.0
Total phosphorus pentoxide	26.2
Lime	36.0
Iron and aluminum phosphates	17.6

or in the conventional way—

Total phosphate of lime	57.3
Iron oxide and alumina	8.8
Insoluble matter	22.0

C. Sample V. A blue grey deposit from surface of Claim II.

Insoluble matter	20.4
Total phosphorus pentoxide	25.6
Lime	38.0

corresponding to—

Total phosphate of lime	56.0
-----------------------------------	------

D. Sample XI. Nodule from Kafir Kraal Claim.

	Per cent.
Moisture	0.79
Loss on ignition	2.64
Insoluble matter	26.5
Total phosphorus pentoxide	23.0
Lime	33.0
Iron and aluminum phosphate	22.2
Carbon dioxide	1.8

corresponding to—

Total phosphate of lime	50.1
Iron oxide and alumina	11.1

E. Sample I. Earthy nodule from Claim I. of a dark blue colour with red streaks, evidently much more ferruginous than the usual nodules—

Moisture	1.6
Loss on ignition	3.1
Insoluble matter	23.4
Total phosphorous pentoxide	22.6
Lime	32.0
Iron and aluminum phosphate	31.0

corresponding to—

Total phosphate of lime	49.4
Iron oxide and alumina	15.5

F. "Hard Wood" phosphate from Claim IV.

Insoluble matter	46.7
Total phosphorus pentoxide	18.7
Iron and aluminum phosphates	3.6

corresponding to—

Total phosphate of lime	41.4
Iron oxide and alumina	1.8

G. Sample XX. Bed of light coloured rock on Claim VI.

Insoluble matter	51.9
Total phosphorus pentoxide	12.7
Lime	17.7

corresponding to—

Total phosphate of lime	27.6
-----------------------------------	------

H. Mixed sample of "Wood" phosphate.

	Per cent.
Insoluble matter	22.1
Moisture and loss on ignition	7.3
Total phosphorus pentoxide	24.0
Lime	33.0
Iron and aluminum phosphate	22.0

corresponding to—

Total phosphate of lime	52.4
Iron oxide and alumina	11.0

I should divide the various deposits which I saw into four types:—

1. "*Soft Wood*" deposits, apparently fossilized wood in which the woody tissue has been replaced by calcium phosphate. This variety is apparently of high quality, containing upwards of 80 per cent. of calcium phosphate, little clay but a high proportion of fluorine.

2. "*Hard Wood*" deposits resembling type I., but containing silica in place of some of the phosphate of lime. The proportion of silica apparently varies considerably for I saw some specimens which seemed to consist almost entirely of silica. Very little iron and aluminum appear to be present in both these "wood" forms.

3. *Nodules*. This constitutes the main mass of the available material. As a rule the nodules appear to be fairly uniform in quality, being like Samples IV. and XI. (B. and D.) A few earthier and more ferruginous-looking nodules, of which Sample I. (E.) is an example, occur in much smaller quantity. The nodules evidently consist of an intimate mixture of clay and phosphate, the mixture, however, being so complete that they present a very homogeneous appearance, and an attempt to concentrate the phosphate by removal of the clay by washing the finely divided material with water was quite unsuccessful.

4. *Beds of phosphatic clay*. Many beds, some reddish, others yellow, others blueish grey or nearly white in colour occur interstratified with the dark blue soft shales, and are obviously phosphatic. Sample XX. (G.) may be taken as an example. The proportion of clay is unfortunately very high in these beds, which are probably the source of the calcium phosphate found in the nodules which have been formed by concretionary action.

UTILISATION OF THE DEPOSITS FOR MANURIAL PURPOSES.

As stated at the beginning of this Report the most satisfactory form in which phosphoric acid can be applied to the soil is as superphosphate for the soluble state in which the phosphoric acid exists therein insures a far better distribution throughout the soil than can possibly be attained by any process of cultivation with insoluble phosphates.

Now, as is well known, superphosphates are made by treating ordinary tricalcium phosphate with a suitable proportion of sulphuric acid so as to remove about two-thirds of the calcium from the calcium phosphate, thus forming mono-calcium phosphate (which is soluble in water) and calcium sulphate. The latter substance combines with the water always present in the sulphuric acid, and "sets" or dries so that the resulting product is a friable fairly dry mass easily reduced to powder. This material constitutes the superphosphate of commerce.

In all cases a portion of the original tricalcium phosphate is left in the final product, and for this the manure manufacturer gets no payment, since in general a superphosphate is valued according to its content of "*soluble*" phosphoric acid.

The presence of much iron oxide and alumina in a phosphate is objectionable to the maker of the superphosphate, because such materials consume sulphuric acid in order to convert them into iron and aluminium sulphates, while these latter products are also injurious in preventing setting or drying and because they tend to reduce the quantity of soluble phosphoric acid in the final product by gradually acting upon the soluble mono-calcium phosphate and producing calcium sulphate and insoluble iron phosphate and aluminum phosphate.

In many cases a reduction in the price of the raw phosphate is allowed if the proportion of iron oxide and alumina present exceeds 3 per cent. Another objectionable ingredient in a phosphate is fluorine. This not only involves a consumption of sulphuric acid but also entails annoyance by the fumes of hydrofluoric acid or of silica fluoride evolved when the phosphate is treated with acid.

It will probably be safe to assume that the nodules on the Weenen deposit will contain on the average 25 per cent. of phosphoric acid, corresponding to about 54 or 55 per cent. of phosphate of lime, so that they might reasonably be expected to yield a superphosphate containing about 25 to 26 per cent. soluble phosphates—a product much lower in quality than the usual superphosphate imported into this country (31 per cent.), but not sensibly differing from many samples largely used in England.

Attempts have been made to use mineral phosphates directly as manures, and, while the results of field trials are somewhat conflicting, the general conclusion is that their effect in this form is small.

Nevertheless, if extremely finely divided, say, to pass a sieve with 100 meshes to the lineal inch, it is quite possible that they might be found successful in this country, especially on peaty or turf soils.

In any case, it is well to submit them to trial in this form on carefully chosen plots and with various crops.

In conclusion, I would take this opportunity of congratulating Natal upon this discovery, which adds greatly to her mineral assets and cannot

fail to be of great advantage to her agricultural population and to that of her sister Colonies.

(Sgd.) HERBERT INGLE.

Durban, August 21st, 1908.

It may be of use to give some recent statistics as to the magnitude of the American phosphate industry.

In Florida the total shipments were as follows:—

Hard Rock—In 1906	561,040 tons.
1907	591,119 „
Land Pebble—In 1906	492,912 „
1907	549,102 „

The average Florida hard rock contains 77 per cent. phosphate of lime and not more than 3 per cent. of iron oxide and alumina.

The pebbles contain about 68 per cent. phosphate of lime. Enormous deposits occur in Tennessee, and in 1906 the exports from this State amounted to 101,466 tons.

Brown Tennessee rock contains about 60 per cent. phosphate of lime.

Blue Tennessee rock contains about 60 to 78 per cent. phosphate of lime, and less than 3 per cent. iron oxide and alumina.

Algerian phosphate is also used in large quantities.

Two qualities are sent out: (1) 63 to 70 per cent. phosphate of lime.

(2) 58 to 63 per cent. phosphate of lime.

In the exports of bark during the eight months ended 31st August, there is a slight falling-off noticeable compared with 1907. This year the exports for the eight months were 40,300,434 lbs., valued at £95,587, as against 42,017,057 lbs., worth £108,592 in 1907.

Natal's oversea exports of South African produce are increasing. During August the value of such produce (exclusive of gold) exported was £220,711, as compared with £198,959 during the corresponding month of last year. During the eight months ended 31st August the value of such exports was £1,911,831 for 1908 and £1,858,195 for 1907.

Natal Mineral Phosphates.

By ALEX. PARDY F.C.S., Analyst.

MENTION was made in the July number of this *Journal* of important discoveries in Natal of phosphatic rocks which were likely to prove of considerable value. By courtesy of Mr. Gray, Commissioner of Mines, several samples of these rocks, forwarded from Weenen by Mr. P. D. Simmons for report as to their value for manurial purposes, were examined at the Laboratory, Cedara, and found to contain:—

	A.	B.	C.	D.	E.
Moisture ...	1'31		0'92	1'33	0'70
Loss on Ignition ...	4'32		2'08	3'65	2'05
Insoluble Matter ...	0'70	60.72	26'86	26'98	22'68
Phosphoric Acid ...	36'35	10.98	23'12	23'25	25'28
Lime ...	48'22		32'01	31'06	34'84
Magnesia ...	0'33		1'34	1'01	1'12
Iron and Alumina ...	2'24		7'67	9'61	7'05
Silica (soluble) ...	0'12		0'24	0'20	0'72
Carbon di-oxide ...	1'21		1'76	1'80	3'42
Fluorine and undetermined	5.25				

A giving an approximate composition of:—

Phosphate of Lime ...	...	...	74'47	}	78'95
Do. Iron and Alumina ...	...	...	4'48		
Carbonate of Lime ...	...	...	2'75		
Fluoride of Lime ...	...	...	8'80		

These samples represent:—

A: What is commonly known as fossilized wood, consisting of a dark brown soft rock easily broken by the fingers either along or across the grained structure, and capable of being easily pulverised into a fine dust. It has the appearance of a woody structure in which the tissues have been replaced or impregnated with mineral matter from the surrounding rocks.

B: A compact greenish grey shale including imbedded fragments of other rocks.

C: A black homogeneous rock with white weathering on the surface.

D: A dark grey to brown considerably weathered rock showing particles of mica and pyrites.

E: An almost black compact concretionary rock of homogeneous appearance with white to yellow weathering on surface.

Mr. C. F. Juritz, Senior Government Analyst, Capetown, has frequently drawn attention to the abnormally low content of phosphoric acid and lime in the soils of Cape Colony. A similar defect was observed and reported on in the early days of this branch's history, and I have re-

peatedly had occasion to emphasise the necessity for special attention to the application of phosphoric acid and lime. Mr. A. N. Pearson gave prominence, as a result of his extensive and carefully planned experiments, to the beneficial and remunerative effects of phosphatic manures, and proved their use to be of the first importance to farmers. Similar findings, as regards the soils of the Transvaal, have been recorded by Mr. H. Ingle, Chief Chemist to the Transvaal Department of Agriculture; and so the similarity of South African soils in this respect accentuates the importance of special attention to this requirement of the soil and emphasises the enormous value a payable deposit would be to the whole farming community.

Quantities of guano, of more or less recent origin, have been discovered in some localities, but the supply is very small. Bones form the largest internal source and have provided a small but increasing quantity; the amount has, however, proved quite inadequate to the large demands which have occurred within recent years. In the course of time, should the increase of stock induce the establishment of tinning and meat extract factories, the available quantities would be of considerable moment, but, on the other hand, should the increase lead to the exportation of carcasses, the need of phosphates would become more marked then. Not only would the natural deficiencies have to be considered, but an allowance made for the enormous amounts of bone phosphate which were sent out of the country in the carcasses.

As it is, phosphoric acid forms the basis of all our mixed manures, phosphates and superphosphates. Enormous quantities in the form of bones, superphosphates and basic slag are yearly imported to supply the requirements of our soils in regard to their productiveness. The value of manures imported into Natal probably lies between £20,000 and £30,000, of which the larger part no doubt goes for phosphates.

The discovery of a workable deposit would mean the circulation of money in the Colony through the employment of miners and manufacturers and also the retention of much capital which at the present time finds its way oversea in return for imports. Not only would benefits fall to the commercial side of the enterprise, but these would be extended, under favourable conditions, to the advantage of the whole of South Africa.

The rocks most largely employed in the manufacture of superphosphate are obtained largely from Britain, Canada, America, and the Continent, they range in their contents of—

					Average.
Phosphoric Acid, from	...	...	20 to 40	per cent.	30
Lime, from	...	...	15	, 55	35
Iron and Alumina, from	...	...	2	, 25	13

Thus it would appear that some of the local rocks besides A, although under the average in phosphoric acid are still capable of yielding a low grade of medium superphosphate.

The cost of manufacture may vary somewhat from that required in the established centres, and is to some extent governed by the price of sulphuric acid; we are fortunately, owing to the enterprise of some of our local firms, in a position of comparative independence in respect to the importation of this acid, and with the two most requisite materials at hand appear to be in the promising position of obtaining future supplies from local sources.

There is little doubt about the need and demand for this class of manure; the chief consideration must be the price at which the article can be retailed. Should it compare favourably with imported stocks then it is sure to be in large and increasing request.

The sample *A* represents a rich rock, but has the drawback of containing a rather high proportion of fluorine. The calcium fluoride is objectionable both on account of its consumption of sulphuric acid and its injurious and disagreeable fumes. The other samples *C*, *D* and *E* with phosphoric acid ranging from 23 to 25 per cent., contain rather more iron and alumina than is desirable. *E* is much the best in these respects and offers a very serviceable material.

Iron is inclined to react on the soluble portions and to affect detrimentally the mechanical qualities of the product; both iron and alumina exert an unfavourable action on the drying qualities of the manure. When present in small or moderate amounts carbonate of lime is not objectionable in rocks intended for the manufacture of superphosphate. Its conversion into sulphate of lime certainly means absorption of some of the acid, but the carbon di-oxide liberated during the exchange and which is intimately mixed with the mass prevents undue solidification and imparts to it porosity and better drying qualities.

These rocks have some value in their raw state when finely ground, and it may be found profitable to employ some of the lower grades in the form of an extremely fine powder. The main value of such phosphatic rocks is obtained only after their conversion into superphosphate, and in this direction lies their maximum usefulness: those rocks, however, which are too poor for conversion may be employed as ground rock.

It was found that a small part of the phosphoric acid was soluble in weak (2 per cent.) citric acid, and if applied in the raw state their action would be slow as compared with the manufactured product. The amounts thus ascertained to be soluble in the finely ground rock were respectively:

	A	B	C	D	E
Phosphoric Acid ...	4.56	...	3.35	3.78	3.53 per cent.

Basic slag with a total of 18 to 20 per cent. phosphoric yields 12 to 13 per cent. soluble in citric acid, ordinary bone with 22 to 24 per cent. yields under the same conditions from 4 to 6 per cent. soluble, so that they resemble bone somewhat in this respect.

The Stalk-grub and the Cut-worm.

By J. H. LILIENTHAL.

IN a letter to the Government Entomologist on November 1st on the Keever Beetle I concluded that this pest looked to me as serious to mealie cultivation as the stalk-grub and cut-worm combined. Though the ravages of the stalk-grub this last season have been enormous, I still uphold this opinion. In his first report Mr. Claude Fuller states: "How this pest passes the winter I am, as yet, unable to say with certainty, but what evidence I have leads me to the belief that some of the pupæ remain in the mealie stalks, whilst others emerge as moths late in May and hibernate as adults." Thus it seems impossible to eradicate the pest through burning of the mealie stalks, unless later investigations differ. Yet, does it not seem worth a trial, considering the graveness of the situation and the small value mealie stalks have as food for stock? The best proof for this is, that not a single analysis has been published of stalks after they have been frosted, and recently it came to my knowledge that, in localities in Natal where mealies cannot be raised, stock do just as well without the stalks. In 1904, when the Cotton Boll Weevil had crossed the Sabine River into Louisiana, at a meeting of planters it was suggested that the whole of the U.S.A. should go out of cotton for one year, as the weevil lived in this plant only; it was mentioned that when Canada had the Pea-Weevil, the whole of the Dominion went out of peas for one year and thus exterminated the latter pest. Cotton is the all-absorbing industry in the southern U.S.A., therefore the people demurred, although there is a wide range of farm crops they could fall back on successfully were these given attention.

Now, what Canada could do with peas—admittedly a by-crop—could not Natal do this with the practically valueless mealie stalks—to make sure, to burn them for two years? No doubt the Natives will co-operate, if the necessity is explained to them. I hear that in East Griqualand they appoint certain days on which they cut the maize below the grub and throw the tops into the rivers: a suggestion of mowing the young plants down: but the mower would be better applied to grass for hay, in order to replace burnt stalks. To check the stalk-grub through rotation of crops (direct effect) is out of question.

Here in this locality (Dronk Vlei) in 1897 maize could be planted with safety the last week in October, now the last week in November is not safe: and as maize cannot be planted later than 24th December to escape the frost, it can easily be calculated, when maize-growing will be a thing of the past. And what then? We have no opening for fruit,

truck crops, etc.; and would it not be better to sacrifice the stalks now than lose them for ever?

In those maize-growing countries known to me, I have never heard of the stalk-grub, so no possible remedy could be learned from them. Illinois, besides Iowa, the leading maize State, has a stalk-borer, as I find mentioned in "The More Important Insect Injuries to Indian Corn," by S. A. Forbes, State Entomologist. This stalk-borer (*Papaipema nitela*) is stated to be much infested by parasites, and that, fortunately, injuries by this insect are not of a kind to require special measures of prevention or remedy. This explains the fact that none of the maize-farmers in that State knew the stalk-grub. (Here I should strongly advise, to prevent the continual misunderstanding in conversation, the use of the word "stalk-borer" instead of "top-grub," and "cut-worm" for "ground-grub.") The introduction of parasites would probably require a number of years before any benefit could be derived therefrom.

Returning to the boll-weevil, thorough cleaning up around the ginneries and burning of cotton stalks were advocated, and cultural methods which would bring on a crop of cotton before the weevil could do any harm. Notice the difference practised with the stalk-grub—later planting!

Are cultural methods possible to counteract the losses through stalk-grub? Up to last year's observation I thought not, and I hesitate to give a conclusive opinion, which would be justified only after trials conducted over a number of years. Besides, I only believe in extermination, for all other attempts to combat the pest must be both unreliable and expensive. Still, before extermination is feasible, some maize-growers may desire to experiment, and I will give last year's observation (not experiment) for what it may be worth. In order to do this, I have to give field operations on a cultivation 900 feet wide, each 100 feet containing about 5 acres, texture of soil alike. Originally this cultivation was a mile long, but, as subsoiling had been delayed year after year, the lands could not absorb the heavy rains of the previous season, and a cross-drain had to be made, whilst a drain on the outside of the cultivation 2 feet wide and about 18 inches deep had to be widened to 6 feet and a corresponding depth. Of course, before this work was completed the crops were lost. The lands have only a gentle fall, and to ensure them against further wet seasons, subsoiling was proceeded with.

Deep ploughing is more favoured now in many parts of the world; without doubt it is the most economical, as it can be done in one operation, but only from $\frac{1}{2}$ to 1 inch deeper at a time: the depth can be increased every year, which would involve a somewhat long period till, say, 18 inches had been attained, to counteract wet seasons. Besides this, subsoiling should be decidedly the better; it acts for a large number of years, if not for all time. With deep ploughing not only the draught is

heavier every year, but each season such agents which have naturally to be on the surface for good plant growth are buried to a depth out of reach for the seed when forming the root-system; the plant produced lives in a sickly condition, is not strong enough to grow any height, nor produces grain. One may hear farmers state that the plant has been "burnt" by the subsoil brought up; while in reality the subsoil contained the same mineral matters as the top-soil and only wanted the physical conditions. The old theory, I believe, was that the plant obtained food from the soil by directly attacking it with its roots; now it is understood that the plant-food has to be dissolved by water and in this form feeds the plant. Thus all that is necessary is to loosen the soil, so that water can sink and rise as the conditions of weather may require. For this, deep ploughing is not necessary, which may deprive the plant of such agencies which nature itself has placed on the surface and which, as far as I am aware, no water or other factor can bring to the growing plant. The cultivation of the sugar beet is at the present moment arousing considerable interest in Natal; ploughing to 15 inches deep is indispensable, that the roots of this plant can penetrate the soil, for all growth above ground is not utilised at the factory, having a low percentage of sugar. Root-crops are not affected to such a degree through subsoil turned up as cereals. I always plough my lands for potatoes 12 inches deep, with good results. Yet, in some new countries where land for sugar beet was ploughed to a great depth at once, it spelt failure; and only after the second year, when the soil turned down was brought up again, good crops were raised. The loss of one crop might have been avoided had subsoiling been resorted to the first year.

It is well known that many insect pests are held in check when fertility of the soil or conditions of the weather bring on the plant rapidly; the plant then receives food in such abundance that it can spare the surplus for the insect. A year ago I had a letter from a correspondent interested in cotton cultivation, stating that the cotton boll-weevil had been combated effectively through "cultural methods," and that this cultural method meant nothing but good farming. The writer went on to say: "There is no danger of losing our cotton supremacy. We will come out of this boll-weevil scare even stronger in this regard than ever. The worst infected sections have this year made more cotton than ever before." To specify the ravages of the cotton boll-weevil as compared with the stalk-grub would be worse than useless; it is quite out of question that with a large maggot tunnelling the very marrow of the plant as much and more maize may be raised. Still, the plant may live with the grub and produce a good crop.

In order to make my observation better understood, I will divide the before-mentioned 900 feet cultivation into sections:—

Section I. (100 feet) had all the overflow before the drain had the

proper capacity; in places the top-soil and in others even much of the subsoil had been carried to lower parts. Having been saturated all summer it naturally became very hard in the dry season, and had to be ploughed in such condition last spring. Every farmer knows that, in hard land, if the plough enters it at all, it will only go at the depth of the former ploughing or deeper. Large, square clods were produced, which the float would not reduce much, and which the drag-harrow would have only removed from their position. Discing I do not favour in freshly ploughed land; it reduces the clods to size of distance of discs, and during first cultivation these lumps endanger the young plants in rolling on them if struck by fenders of cultivator. Discing can be resorted to, when a flat roller, in two sections leaving the space free where planter wheel has gone, can go over the ground after mealies are up.

Section II. (300 feet) was ploughed the previous year before autumn to a depth of 8 to 10 inches with a subsoiler up to 9 inches deep following. All vegetation, in places so high and dense that the animals could scarcely face it, was ploughed in. This spring, the soil being fairly compact, it was prepared with disc, float and drag harrow.

Section III. (300 feet) was worked under conditions like Section I.

Section IV. (200 feet) was ploughed after a rain and turned over in such a state, as it should be.

Planting commenced on November 22nd, and only Sections I. to III. were done; on 16th December Section IV. was planted. The three sections first planted showed the stalk-grub evenly distributed all over when the time arrived to notice; after silking and tasselling in Section I. at slightly washed places the plants had withered, where badly washed the plants had died, and where the washed soil had been deposited, no trace of grub was visible. Section II. showed no grub. Section III., not water-worn, was in the same state as when noticed first, and only nubbins were the result at husking time. Section IV. had no stalk-grub, but was infested with the corn earworm to a degree which made grading a trouble on account of bad grain in otherwise sound ears; this is more or less so every year with late planted maize; besides, the grain is usually light and without lustre. All ears harvested from the stalk-grubbed land were with perfect, well-glazed grain. What a boon would it be could we begin planting in September! It was stated somewhere that late-planted maize requires less cultivating; but for this it requires the more preparation, keeping down the weeds till planting time. The North American grower has this great advantage, though his planting time is short he puts in his maize when weed growth has not commenced.

And now a few words on the cut-worms. With these I never had any trouble. In winter-ploughed land none at all appeared; the moth is stated not to deposit its eggs in ground without vegetation. In spring-ploughed land, when the ploughing could not be done to a depth to cover

the weeds (with safety for the crop of maize), some cut-worms were noticed. These had lived on the weeds not effectively killed through preparation and after this took to the young maize. What applies to the pupæ of the Keever Beetle does also to the cut-worm: starving out through keeping down vegetation, and directly killing through stirring of the soil.

Taint in Hams and Bacon.

By LOUDON M. DOUGLAS,
Lecturer on the Meat Industry, Edinburgh.

ALTHOUGH such vast quantities of hams and bacon are produced, there has been very little attempt to understand the actual processes which occur in the transforming of the fresh pork into the finished article. The process of curing has varied very little for centuries, and the only difference between the present day system and that which was in vogue a century ago, consists in using less salt than formerly; so that, whereas cured meats at one time were heavily salted, they are now lightly salted—in order to produce what is called “mild cured bacon” or “mild cured hams.”

It is a mistake, however, to suppose that the mere dissolving of the salt, or any other ingredient which may be placed on the fresh meat, has the effect of “curing” the meat. It has no such effect, but really only prevents the development of the germs of putrefaction.

In this connection it is interesting to note that the germ which produces taint in meat has been isolated. We are indebted to Dr. Klein for accomplishing this result, and his notes on the subject are of the most interesting character.

Dr. Klein states that his examination of the muscular tissues showed that they were more or less discoloured. In very slightly tainted portions, the colour changed to a pale or dirty grey tint, while in strongly tainted portions, the colour approached dirty green, and the microscopic examination of the muscles disclosed the fact that *tyrosine* was present. The origin of the crystalline nitrogenous product is somewhat obscure. It was discovered by Liebig in animal tissues and attributed by him to decomposition of the albuminous substances present.

The notable feature is that in the presence of taint, a very powerful and objectionable odour emanates from the various joints.

In the various specimens of tainted meats examined, it was found that a species of microbe predominated everywhere, and more especially in the parts which were highly tainted. These microbes exist in the form of cylindrical rods, only visible to the eye by means of a powerful microscope, but the same appearances occur throughout the connective and fatty tissues of the meat, and if the tissues are undisturbed, the rods will present the appearance of being continuous, but very easily get broken up into short segments.

This particular microbe, which Dr. Klein has named *Bacillus fordans*, is not possessed of the power of moving, such as is characteristic of many other germs, but must rely for its progress on gradual multiplication. This feature, therefore, explains why it aggregates in some parts more than in others. The microbe is incapable of growing freely in the air or if it is exposed to oxygen (*Anaerobic*), and it is also incapable of forming spores or seeds, and, curious to say also, the ordinary methods of culture of micro-organisms seem to be quite useless in this particular case, inasmuch as the usual media do not seem to support its growth.

The principal characteristic, however, of the experiments which have been made, is that while the germ grows in a substance like milk a most disagreeable odour is emitted. Subcutaneous injections in guinea-pigs did not produce any local or general disease, thus showing that the germ has no injurious effects.

The facts which have been established in these investigations are very helpful in the process of curing. There can be no doubt that the germ is produced in meat from decomposition, which may be set up in several ways. If the meat is insufficiently chilled before the curing agents are used, or if the animals have been slaughtered immediately after a journey in which they have been knocked about, then putrefaction will almost certainly supervene. These germs, however, may be taken up in the cellar itself; and, as they are so very small that some hundreds of thousands of them can rest on the point of a needle, then it will be understood that once they have obtained a location in a cellar, they are apt to remain there.

I am of opinion, however, that the development of taint can be prevented by inhibiting the propagation of these germs by immediately pumping an antiseptic solution into the bacon and hams, and for this purpose I have found that the best antiseptic mixture consists of 55 lbs. of salt, 5 lbs. of saltpetre, and 5 lbs. of dry antiseptic (boric acid). This mixture should be made up to 10 gallons with water, boiled and stirred till clear, then allowed to cool to the same temperature as the cellar. I am familiar with the objections which have been raised to the use of boric acid in any form, but they seem to me to be empirical to a large extent, and not possessing any real virtue—the result, in fact, of mere prejudice.

Such an inhibitory solution, if injected into bacon, enables decom-

position, as it proceeds, to be controlled until the tissues become saturated with a solution of the curing agents. These curing agents consist generally of salt, saltpetre and a preservative in solution.

I have found in many cellars that the liability to taint is greatest when the atmosphere is in a stagnant condition and thus liable to encourage the propagation of moulds and similar organisms, and it is invariably the case that when once taint attacks a cellar it is with the greatest possible difficulty that it can be eradicated without having recourse to strong measures.

The remedy is, to clear out the cellar and, after closing up all the apertures, evaporate within it a strong volatile germicide. I have found one or two of these to be highly effective; and when evaporated they search into the crevices of the cellar and so destroy any germs which may be lurking there.

After this cleansing process has taken place, it is a wise thing to lime-wash the roof and sides of the cellar, and I am inclined to think that this should be done at least once a year, as there is now available a machine which enables lime washing to be done very rapidly, and I think it ought to form an annual operation in all bacon establishments.

“The application of credit in agriculture is almost essential to the success of peasant proprietors under modern conditions, though the conditions are not those of ordinary trade. In ordinary trade the purchase and sale of goods is usually effected within comparatively short periods, whereas the growth of crops and the breeding of stock alike require the advance of money and labour for long periods before any return can be expected. Pending the sale of his produce and the realisation of his profits, the small farmer may at first reasonably require assistance to purchase fresh stock, manures, feeding-stuffs, and implements, or to enable him to take full advantage of his opportunities—to buy in a cheap market or to hold his produce when conditions are unfavourable. The landowner, also, may need money for improvements, for drainage, for making farm roads or farm buildings, etc.—expenditure from which he can only receive a very gradual return in the form of rent. How to make the capital thus required accessible to agriculturists at a low rate of interest is a problem which has attracted great attention on the Continent during the last 50 years, and in many countries seems to have been satisfactorily solved.”—*The Economist*.

Poultry Keeping in a Simplified Edition for Farmers.

By F. C.

[Continued from page 989]

[By Special Arrangement with the "South African Poultry Journal," Durban.]

REARING THE CHICK.

WE have already dealt with the most important part of chick rearing, the food and feeding; but there are several other details of management that go towards making a success of this most vital part of poultry keeping.

First of all there is the housing to consider. With grown stock we found there was good to be got out of allowing our birds to roost in trees, and if it was only a case of an abundance of fresh air, we should advocate the same system for chicks also.

This let-alone plan, however, is only permissible because fowls ten or twenty feet up a tree are not affected by the droppings on the ground beneath them. But with young stock it is vastly different; for these sleep right on the ground, and the filth they rest on increases nightly. Another evil induced by thus allowing things to take their own course is roosting at an immature age. Even when good perches are provided, this early roosting has a tendency towards causing crooked breasts, especially with heavy breeds. But when thin and irregular branches are used the deformity becomes common.

For these and many other reasons, we find it quite essential that all hatching and rearing shall be under our control, though our mother hen is given a free rein in a good many important ways.

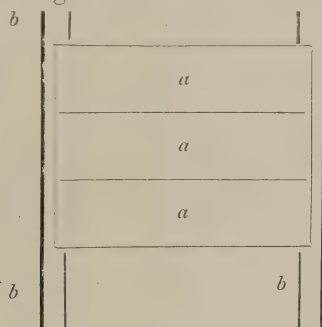
Our desideratum, then, will be a coop of some description, the chief requirements of which are strength, roominess, portability and airiness. Many poultry keepers in a small way convert old packing-cases into coops with as little alteration as possible. This is the minimum of initial labour plan, and is better than nothing. But when it comes to moving, cleaning or admiring this type of dwelling, one begins to see that the same wood and a little more trouble at the start, expended into making serviceable coops of one pattern, create a much greater ultimate satisfaction.

A chicken-coop is an article not difficult to design, and plenty of ideas may be gleaned from advertisements in dealers' catalogues. In dimensions it should be not less than two feet high and square, and should have the front quite open. If it is desirable to confine the hen, let there be thin bars spaced two or three inches apart, one of these to be detachable. If any danger from vermin is feared (and we have lost whole broods to a variety of wild cat in which would seem to be com-

bined the strength of a tiger with the intrusive capacity of a mouse!), the coop must be closed with a shutter of small mesh wire netting, and not sealed up with a wooden door.

Whenever it is possible to do without floors some trouble will be saved, and the chicks will thrive better on mother earth. Where this is impracticable on account of dampness or through lack of space giving no scope for the constant shifting to fresh ground, a *movable* floor should be provided. If the coop is just laid on flat boards, a heavy rain will splash on the projecting ends and under the edges of the coop; and if the boards are cut a little less all round than the dimensions of the coop there is always a possibility of the coop blowing off or being pushed aside by any passing object.

A very simple, yet most satisfactory, device is the one we illustrate, which is adaptable to any size of portable house, and which almost explains itself. This was claimed by the late Lewis Wright as his invention originally, but has been widely copied by manufacturers of appliances. We take the cut from Wright's "New Book of Poultry."



Three half inch boards (*a a*) are nailed to pieces of 2 by 3 quartering (*b b*) as shown, so as not to reach the edges. If these are cut the proper lengths, it will be seen the coop sits down outside this floor on the space left of the quartering. If any of this still projects beyond the sides of the coop, it should be sloped away, so as not to retain any moisture. Such a floor stands up several inches clear of the ground, and will remain dry in any weather. The pieces of quartering are left projecting in front for the purpose of a feeding-board for the chicks being placed thereon. When floors are used under coops, these should be treated much in the same way as that to which we referred when writing of fixed houses. Dry earth or some soft material must be provided, and this should be renewed far more often than is necessary with larger houses. Cleaning operations are, indeed, so little trouble where a detachable floor is used, that there is no excuse for shirking a scrape-out two or three times a week, especially when it is remembered that the manure thus gathered is of considerable value.

As with other appliances, some trouble must be taken to keep coops

clean. A couple of coats of creosote or carbolineum applied hot will effectually settle any parasites already in possession and will keep intruders at bay. A coop thus treated becomes a lifetime affair as regards wear. With a clean house and free range, our chicks will seldom be much troubled with parasites.

In cases where the whole brood has to be confined, on account of such pests as hawks and cats, or to prevent the chicks scratching where their services are not required, a run of some sort must be provided. A simple frame of timber with wire-netting stretched over it is cheap and desirable, and the bigger it can be made the better, provided it is conveniently portable. A good size for use when attached to a coop is about six by three feet. If the hen is to occupy it, it should be made not less than eighteen inches high. When birds are thus confined, the provision of shade and shelter must not be forgotten, for chickens usually dislike to return to their bedroom for these. A few old sacks, or, still better, a sheet of galvanised iron with some sacks on top, will provide a welcome retreat from both sun and rain, if laid across the top of the run.

Except when absolutely imperative, this confinement is mere extravagance. The more liberty the better, so long as this does not lead to neglect of the stock. We cannot make a very profitable business of poultry by running alongside nature the whole way, but so far as rearing strong, healthy, glossy birds is concerned, the natural way, with no more modifications than are absolutely essential, is the best and easiest.

After a month or two of mothering, our hen shows signs of wearying of her chicks. In many cases she will start laying in the coop, and is usually in fine condition after her weeks of liberty. She should, therefore, be replaced among the layers, and her brood allowed to occupy their coop without her.

As soon as the sexes can be distinguished, or at any rate when the cockerels begin to crow, the pullets should be separated and kept in small houses apart from the adult stock. The cockerels may be similarly treated, or, if the coops are not required for other broods, they may just as well continue in these, not allowing more than ten to each coop.

With the exception of a few cockerels we may wish to keep to maturity, it is advisable to get rid of every one as soon as it is large and fat enough to either sell or to kill and eat.

A considerable amount of attention expended on our pullets will be amply repaid. Food should never be stinted, and an allowance of meat, even to those at liberty, will help to bring them to size and eggs at an early date.

Any weaklings, stunted birds, and hopelessly miscoloured specimens (but do not reject birds on this account until you know something about the earlier feathering of your breed) should be weeded out. Even if it is only 25 per cent. of the original chicks that are eventually retained, this is good enough if these are large, sound, typical pullets.

The Forests of Asia.

HOW THEY ARE CONSERVED.

IN the last two issues of the *Journal* we have had articles describing conditions and methods of conservation in Europe; and we now, according to promise, proceed to sketch on similar lines the conditions existing in India, Japan, and China.

INDIA.

The forests of India in the territory under British control cover nearly 180,000,000 acres, or 24 per cent. of British territory. Of this a little over 149,000,000 acres are State lands, principally under forest. The rest of India, comprising 600,000 square miles, is made up of native States under British suzerainty, some of which have as much as 24 per cent. under forest. Not all of the British State forests will remain under State control, since those now under management include three classes of forest, namely, reserved, protected, and unclassified, of which only the reserved forests are permanent. The reserved forests now comprise 9.5 per cent. of the State forests. In the course of time, it is expected, they will comprise at least 15 per cent. of the total area of British India. The value of forest products annually exported is over £28,800,000. The annual net revenue from the State forests has risen in forty years from £48,000 to £660,000.

The coming of forestry in India was the result of peculiar local conditions which differed in many respects from those of older forest countries. Among these were the practically complete dependence of the people upon wood, the aggravated wastefulness of forest cutting, and a shortage of the teak wood required for the British public works at Bombay and other places. Many difficulties beset the way of reform when reform was forced upon the Government. The ignorance and wastefulness of the natives, the destructive popular rights to the use of the forests for wood and pasture which had grown up during the ages under loose native administration, and the lack of a central authority strong enough to enforce regulation, all helped to make the situation a difficult one. Yet the Indian forest service is one of the most efficient in the world. The right of the State to intervene for the general welfare by protecting and developing the forest has been clearly recognised and successfully applied. This is the reverse of the case in Great Britain.

In the size of the country, the variety of the climates, the old habits of forest waste, the damage done by fire, the existence of arid regions and deserts, the problem of floods, the importance of grazing, the possibilities

of irrigation, and finally, the extent of the national forests (India 149,000,000 acres, the United States 160,000,000 acres), Indian forestry has broad lines of resemblance to forestry in the United States. Of the cultivated acreage 30,000,000 acres depend upon irrigation. But the differences between the conditions in the two countries are no less striking. The backward industrial stage of India, the fact that 70 per cent. of its population are engaged in agriculture, its lack of available coal and the consequent dependence of the people upon wood for fuel, and the exceptional character of its forest products, clearly indicate that progress in forestry can not move so rapidly there as in the United States and other countries.

Great areas must be kept under forest in India in order to supply local demands. Although the coast line is long, the country is so large that wood importations would generally involve very long hauls, which would greatly add to the cost of wood. In this respect the railway has not brought the changes which have followed it in other countries. Instead of carrying in foreign wood to supply home production the railways have themselves made fresh demands for local construction material, and instead of carrying in new fuel they have in many cases drawn upon local wood for their own fuel. Iron mines are not conveniently located, so that wood must long continue to be used in place of iron and steel in construction. In addition to the forest area needed to supply fuel, twice that area ought to be maintained in forest for construction timber, boat building, tools, implements, public works, railways, etc. One-half an acre of forest per head of population will be needed to meet all these demands. This would call for 17 per cent. of the total area of the British provinces; and the other large demands for minor products would raise the minimum requirements for forest to 25 per cent. of that area. Since, at the best, not more than 15 per cent. of British India is likely to become State forest land, the need of broadening the field of forest management is very obvious.

The need of forest conservancy was felt at the very beginning of the nineteenth century on account of the difficulty in securing the timber required for public works. A timber agency was established at Bombay, but was abolished in 1823 because of friction with local civil officers. In 1843 the protection of teak forests was vigorously agitated, and a teak plantation was started which is now well known as the Nilambur teak plantation. A Conservator of Forests was appointed in Bombay in 1847. Forest conservancy was commenced in Mysore in the same year, and in 1856 a Conservator of Forests was appointed in Madras. The first comprehensive forest policy for India was, however, laid down in 1856 by Lord Dalhousie, who, at the close of his administration, appointed the celebrated Sir Dietrich Brandis to the post of Superintendent of the Forests of Pegu, which had been annexed by England. By dint of persistent

effort Brandis succeeded in carrying through measures to protect the supplies of teak in the Burma forests, which now yield an annual net revenue of £162,000, and became the first Inspector-General of Forests. From that time the various other presidencies have been putting forestry into practice, and the forest laws of 1865 and 1878 complete the legislation necessary to carry on the present successful forest department.

Forest fires were always exceedingly destructive in India, but since 1860 protective measures have been so improved that an area of 3,500,000 acres, or 36 per cent. of the area of reserved State forests, is now effectively protected against fire. The protected area is to be steadily increased.

Working plans for 3,000,000 acres are being carried out, and plans for a million acres more are being prepared.

Since forest planting was begun, more than sixty years ago, 128,000 acres have been planted, about one half of which, consisting of teak, will materially increase the output of teak from Burma hereafter.

The State forests are handled on the principle of a sustained and increasing yield. Both natural reproduction and artificial planting are used to keep up the forest growth as areas are cut over. The large increase of the net returns shows how effectively this system of management is working.

JAPAN.

Japan has nearly 58,000,000 acres, or 59 per cent. of its total area, under forests. The State owns nearly 33,000,000 acres (56·8 per cent.); the Crown nearly 5,250,000 (9·1 per cent.); municipalities over 4,250,000 (7·5 per cent.); shrines and temples nearly 500,000 (0·7 per cent.); and private owners nearly 15,000,000 (25·9 per cent.). Although more timber is imported than is exported, Japan exports nearly £250,000 worth of wood and £850,000 worth of matches. The net revenue from the State forests has risen 16 per cent. in the past twenty years, and is now £1,600,000 a year.

Under the old feudal system of Japan the forests were for centuries reserved and cared for, and a continuous policy was assured. In fact, Japanese forests have been managed longer than any of those of Europe. They were controlled before the birth of Christ, and during the early Christian centuries forest planting on watersheds to prevent floods was enforced by frequent edicts, and the felling of trees was supervised by officers of the provinces. As a result, Japan alone among the nations began modern industrial progress with its forests not only unimpaired but improved after centuries of use.

When, in 1868, the feudal Government of the Shoguns passed away and the Mikado was restored to power, the old restrictions were removed and the forest was over-used wherever it was within easy reach of the market. Ten years later public-spirited men demanded the reservation

and administration of national forests. By 1882 a first draft of forest laws was prepared by officers who had been trained as foresters in Germany, and, after preliminary legislation, the general forest law of 1897 resulted. Under this law the State and Crown forests are administered and the cutting of private, municipal, and religious forests is regulated. A part of the expense of administration is paid out of a special fund secured by the sale of certain small State forests which it is not desired to retain. These sales return about £200,000 a year, which is spent in forest improvement work, including surveys, planting, and the preparation of working plans. The State forests of Japan produce about 2,000,000,000 cubic feet a year.

There are two classes of forest, called "reserve" and "available" forests. The first are guarded from reckless felling which would expose the soil to injury. The second are intended to be developed to their fullest capacity as a source of wealth for the country.

During the past 25 years 200,000 acres of forest have been planted at an average cost of a little less than £1 17s. 6d. per acre.

Private forests are under Government supervision. Where they protect mountain slopes they cannot be cleared without permission, but must be handled so as to keep the forest cover intact.

The Japanese forests are administered in many ways like our own. The personnel is made up of trained men. Up to recent years Japanese students of forestry had to be educated abroad. Now, however, they may receive thorough instruction in their own country.

CHINA.

China holds a unique position as the only civilised country which has persistently destroyed its forests. What forestry has done in other countries stands out in bold relief against the background of China, whose hills have been largely stripped clean of all vegetation and whose soil is almost completely at the mercy of the floods. Trees have been left only where they could not be reached. Almost the sole use for lumber is the manufacture of coffins. The heavy 2 or 3 inch planks for this purpose are so scarce, and the cost of transporting them by coolies is so high, that they sell for 8s. 4d. or 12s. 6d. apiece.

Nowhere in the world is the forest cleaned off down to the very soil as it is in China. When the trees are gone the saplings, the shrubs, and even the herbage are taken. Slender poles are used to build houses; inconsiderable shrubs are turned into charcoal. In the lower mountains of north-eastern China, where the stripping process has reached its extreme phase, there is no trace of anything worthy of the name of forest. In the graveyards and courts of the temples a few aged cedars have been preserved by the force of public opinion, and poplars and fruit trees planted about dwellings are protected as private property by the peasant owners.

In the province of Shantung, where deforestation is practically complete, fuel and fodder for cattle are literally scratched from the hillsides by boys who go out from villages with their iron rakes in autumn to secure winter supplies. Grazing animals, searching every ledge and crevice, crop the remaining grass down to the very roots.

A dearth of wood is not the only forlorn result of forest devastation; a dearth of water and the ruin of the soil follow in its train. In Western China, where forest destruction is not yet complete, enough vegetation covers the mountains to retard the run-off of the rains and return sufficient moisture to lower levels where it can be reached by the roots of crops and where springs are numerous. But on the waste hills of Eastern China the rains rush off from the barren surfaces, flooding the valleys, ruining the fields, and destroying towns and villages. No water is retained at the higher levels, so that none is fed underground to the lower soils or to the springs. As a result, even on the plains the water level is too far beneath the surface to be used. Without irrigation and the ingenious terracing of hillsides, by which the rains are made to wash the soil into thousands of miniature fields whose edges are propped up by walls, agriculture would be entirely impossible. Even irrigation calls for the immense labour of drawing the water from wells.

In a word, the Chinese, by forest waste, have brought upon themselves two costly calamities—floods and water famine. The forest school just opened at Mukden is the first step in the direction of repairing this waste so far as it now may be repaired.

BUTTER-BOXES MADE OF STRAW.—In future the boxes containing butter shipped from Queensland to Great Britain are to be made of straw (says the *London Times*), and a £50,000 company has been formed to work the business. Butter-boxes hitherto have been made of pine, but the drain upon this timber, owing to the heavy exports, has been so severe that the wood is rapidly going up in price. In one month (March, 1908), over 50,000 boxes of butter from Queensland arrived in England—1,250 tons, worth £140,000. In the new box, a mixture of kaolin and straw is used. It can be produced and sold for 1s. At present 3,000,000 boxes are used in Australia annually costing £200,000. The new box will save the dairy industry about £40,000 a year, as the material for manufacturing the box can be grown in the paddock which supports the cow. It weighs about 10½ lbs., is damp-proof, and odourless.

Export of Natal Produce.

POTATOES, LAMBS, AND APPLES.

A SPECIAL general meeting of the Rosetta Co-operative Association, Ltd., was held at the Rosetta Hotel on Saturday morning, the 29th August, when general business in connection with the Association was discussed. At 11.45 a.m., on the arrival of the Hon. W. A. Deane, Minister of Agriculture, the questions regarding the proposed export of new potatoes, lambs, and apples to England were brought up for discussion.

The meeting was well attended, and thoroughly representative of the farmers of the district. Amongst those present were the Hon. H. D. Winter, M.L.A., Messrs. J. Moor, M.L.A., C. Groom (chairman), E. E. Downing (manager), Col. Crompton, H. W. Cross, V. Taylor, W. H. Taylor, J. Phipps, G. Hutchinson, C. R. and R. Acuit, A. Hodson, E. Hodson, J. Henwood, S. and B. Stead, E. Ratsay, S. Merrick, E. Clarke, F. Allsopp, C. and H. Henan, W. Newmarch, A. Mengens, and others.

Mr. C. Groom, the chairman, in opening the meeting, stated they wished to accord the Minister a very hearty welcome for having come up to address them. (Applause.)

EXPORT OF POTATOES.

He then referred to the trial shipment that had taken place of exporting potatoes to London, which, owing to wrong packing, and being forwarded at too late a date, had not turned out very successful. This year, however, with improved packing and by starting earlier, he felt confident they would receive more remunerative prices, and that, providing Government would afford them assistance on the points to be brought up during the meeting, the export would prove successful. Mr. Groom then called on Mr. Downing to read his report on the export of the potatoes to London.

MR. DOWNING'S REPORT.

Mr. Downing pointed out that the report in question consisted of 40 foolscap pages, which, for the purposes of the meeting, he had condensed down to four pages, which he read. The following are the main points referred to in the report:—

During the past two years several experimental shipments of South African potatoes had been made to London, viz., three shipments from the Cape in 1907, and one from Natal in 1908. These shipments were, financially, not a success owing chiefly to the fact that the potatoes, on arrival, were not new. The result, however, had been that exhaustive reports of considerable value had come to hand from some well-known

authorities on the subject in England. From the reports that had been received it would appear that the best time for shipping was in the early part of the year, as there would then be less competition with new potatoes. With regard to the varieties of potatoes, they had been informed that potato dealers did not bother themselves about the names of potatoes, as they went entirely by the appearance, their preference being for a smooth, oblong, kidney-shaped potato of medium or small size with very few eyes. Potatoes must be clean looking, and if grown in retentive soil were to be washed, and be placed into wet peat dust with as little delay as possible to avoid drying. Mr. T. J. Poupart had supplied the following information with regard to grading:—Grade 1, the largest; Grade 2, 7 to 9 tubers to the pound; Grade 3, 12 to 14 tubers to the pound. Grades 2 and 3 were the most saleable. As to packing, the same authority recommended a box to hold 56 lbs. of potatoes (with allowance for shrinkage), so that two cases could be sold for 1 cwt.

With regard to the shipment that had been sent forward by the “Kenilworth Castle,” it was reported that this had arrived at an unfortunate time in an exceptionally bad year; had the shipment been properly packed in smaller cases and in peat dust the returns might have been doubled. In conclusion, Mr. Downing pointed out that though it might be possible to obtain cases at a reduced price, there were only two items in the charges capable of a substantial reduction, viz., railage to the Point 22s. per ton, and freight and primage £2 9s. 6d., total through freight £3 11s. 6d., which he considered compared unfavourably with the facilities accorded to the mealie-grower. He hoped that it might be possible for the Minister to bring about a reduction in these charges in the same way as had been done in connection with the exportation of mealies. There was one other point he would like to bring to Mr. Deane’s notice, and that was the length of time they had to wait before getting payment from Home—it would be of great advantage to them if the money could be cabled out at par by the Natal Bank.

On the Chairman’s request, Mr. Goble read out the figures in connection with the shipments that had taken place from the 1st January to the 31st July, 1908, the total of which amounted, including potatoes sent down for ships’ stores, to 707 cases, 1,678 bags (161 1-5th ton weight), and realised £1,205 12s.

THE MINISTER’S SPEECH.

Mr. Deane expressed his appreciation of the hearty reception he had been accorded, and stated that he had listened with interest to the consolidated report that had been read by Mr. Downing. As Minister of Agriculture he naturally had information which was not in the possession of their manager, but he could assure them that though there were difficulties in the way before the export of potatoes could be placed on a suc-

cessful footing, these difficulties would be overcome, in the same way as the difficulties in connection with the fruit export had been done away with. He had specially come up that day in order that he might hear from them the drawbacks they had had to contend with in the initial shipments that had taken place. With regard to the suggestions that had been made by their manager as to the time they had to wait before getting their money from England, he would promise them that such money would, in future, be in their possession within six weeks from date of shipment. The money would be cabled out at par to the Natal Bank by the Agent-General. As to Mr. Downing's suggestion *re* export being placed under Government control, and to the potatoes being graded and marked by Government inspectors at the Point, the Government would be willing to assist them in this respect also in the same manner as was being done with the export of mealies. With regard to what Mr. Downing had read to them as to peat packing, Mr. Deane stated he would like to draw their attention to a sample of peat that had been forwarded by Mr. A. Clouston, of Nottingham, and which he considered should be given a trial. As they were aware, Government was fortunate in having a very good man in London as Commercial Agent, who would look after the disposal of the potatoes on their arrival in London. Under these circumstances their produce would be sold at a minimum cost to themselves, and at the same time at the best obtainable prices. In continuation, the Minister stated that he was pleased to be able to inform them with regard to the railway rate of 15s. 9d. per ton from Rosetta to the Point, that he could promise them a reduction of 8s. 1d. per ton export rate for 20 ton lots. With regard to obtaining a reduction on the shipping charges from the steamship companies, he would assure them that Government would do its utmost to obtain same, and to assist them in every possible way to obtain a remunerative outlet for their potatoes.

The Minister then proceeded to deal with the question regarding the export of lambs, but, on the suggestion of Mr. J. Moor, M.L.A., it was decided to give any member of the audience an opportunity of speaking on the various points that had been touched upon *re* the export of potatoes.

RAILWAY RATES.

A general discussion then took place regarding the question of railway rates, Mr. Moor drawing Mr. Deane's attention to the difficulty they had experienced with regard to sending their potatoes to Cape ports. In the course of his speech he referred to the fact that the railway refused to regard such potatoes as being for export. Mr. Moor considered that the Cape authorities would have no cause for complaint if Natal reduced the railway rates on potatoes in order to enable the Natal farmers to compete with the Cape farmers. He pointed out that the Cape had reduced their rates for lucerne for the identical purpose. He thought it would

be only right if the rate were reduced in order that they could compete with the Cape potato grower.

The Minister pointed out that the Government had reduced the railway rate on lucerne in order to enable the Natal farmer to compete with the Cape lucerne grower.

Mr. Moor asked that the same might be done for the potato grower. He pointed out that the reduction that had been promised only applied to 20-ton trucks, which would hardly meet the case. In many instances a quantity of three or five tons had to be supplied to a ship at a few hours' notice. What would be of great assistance to them would be storing facilities in Durban, a rebate being granted for all potatoes going over the bar.

The Hon. H. D. Winter pointed out that they would like to be granted the same privileges as had been granted to fruit growers as regards having a sorter, packer, and such like appointed in the interests of the potato growers. He stated that it was important that they should be granted the same rates on small quantities as for large.

LONDON CHARGES.

Mr. Downing, at the Minister's request, read the following report from the Government Commercial Agent dealing with the shipment that had been forwarded by the "Kenilworth Castle":—"Mr. Poupart paid cartage on the whole consignment of 400 cases, but sold only 341, so that deducting from his charges the amount of cartage (2d. a case) on Lewis' lot of 49 and Hawkeswood's 10 cases, Poupart's actual charges are £12 7s. 11d., or 11½ per cent. on sales, and Lewis' (with cartage added) £2 2s. 1d., or 13½ per cent. From general inquiry and careful calculation, allowing for the 'most favoured terms' secured on this occasion, I estimate that the total London charges should not in the future, at an average, exceed 11 to 12 per cent. on consignments realising, say, £8 10s. a ton. It might be possible to contract out the cartage at a cheaper rate, say, 2s. 6d. per ton (the London and South Western Railway charge is 4s. 2d), and thus slightly reduce the average, but this would be dependent upon regular shipments being carted. Of course there is the further point to be considered, whether a carter other than the one regularly employed by the salesman would deliver the goods with equal satisfaction and exactly as required. Taking the foregoing as a basis, and assuming future consignments realised £8 10s. a ton in London, the deductions would appear to be as follows:—Freight £1 15s. (approximately), London total charges (at 12 per cent.) £1, leaving £5 15s per ton, from which would have to be deducted cost of railage to Point, and cost of boxes, peat, and labour. I have endeavoured to furnish from observation, and the very full inquiries I have made, some items of information which may be useful in connection with the export of future consignments, and

I am not alone in the opinion that if only the Teneriffe methods are followed, and the potatoes are shipped at the right season, there would be a good prospect for Natal new potatoes securing a permanent footing here at a price remunerative to the grower."

A general discussion ensued as to the prices of the different boxes, and Mr. Newmarch, of Harden Heights, supplied information as to the prices for the different sized boxes.

Mr. J. Henwood, in the course of a few remarks, pointed out the importance of having some sort of guarantee that the reductions that had been promised, and the further one that might be obtained in connection with the shipping freights, would not be discontinued at any time for purposes of revenue. Given reduced rates that would not be interfered with, he saw no reason why the export of potatoes should not prove very successful.

Mr. Deane, in replying, stated he fully recognised the importance of the rates once having been reduced not being interfered with at a later date for purposes of revenue. He could not, of course, say what future Governments might do in the matter, but they would find that the present Government would do all in their power to assist them to place the export of potatoes on a successful and staple basis.

In replying to Mr. Groom and Mr. Downing on the subject of the impossibility of consignees accepting any responsibility with regard to the proposed reduction on railway rates, the Minister admitted that it appeared absurd on the face of it, and that Government would endeavour to give them the same facilities as had been granted to mealie growers. He wished to point out that Government was not inimical towards their interests, but wished to help them in every possible way. The Minister then referred to the manner in which Government had helped them in obtaining specimens of the potatoes that were sent to England from Teneriffe as also in connection with providing them with samples of the different packages, and stated that such assistance would not end there. In replying to a statement that had been made by Colonel Crompton as to the Government Commercial Agent being handicapped for want of funds, Mr. Deane stated he could assure them that "the ship was not being spoilt for want of a ha'porth of tar." Samples of Natal products were being constantly distributed in England, and steps were now being taken to encourage a market in Paris. Inquiries were now being received from different towns on the Continent, and there was every indication of further markets being opened out for Natal products, which would also apply to Natal potatoes.

With regard to the questions that had been raised by Mr. Downing and Mr. S. Johnston *re* the Government stamp appearing on the cases of potatoes, the Minister considered this to be a very important point. It had been found that, in the case of the fruit export, buyers gave preference

to consignments bearing the Government brand. In many instances consignments were bought with the Government brand without being opened, and he considered the same would apply in the case of potatoes. It stood to reason that where only first-class stuff was sent tip-top prices would be obtained.

(NOTE.—At the conclusion of this report of the Rosetta meeting will be found some interesting information with regard to export of potatoes which has been forwarded to the Department of Agriculture by the Commercial Agent for Natal in London.)

EXPORT OF LAMBS.

The Hon. W. A. Deane then dealt with the next business of the meeting, viz., the export of lambs. He referred to the fact that, owing to the advent of East Coast Fever, numbers of farmers were now going in for sheep, not only in Natal but in the adjoining Colonies, and that in the near future there would be millions of sheep for sale. It was for this reason that he wished to make another trial shipment of lambs. As they were well aware, the conditions with regard to sheep breeding had changed considerably: the fell disease of blue-tongue was no longer such a menace to farmers owing to the vaccine that could now be obtained from the Government Laboratory at Allerton. The Government had introduced Persian sheep into the Colony, and these were thriving in parts of the Colony where Merinos could not. In order to find an outlet for what was undoubtedly going to be a very big industry they must export. The Minister then referred to the trial shipment that had been made last year. He pointed out that it had been handicapped to a considerable extent owing to the lambs having been weaned and clipped, and consequently they had lost in weight. In addition to this the consignment had to be transhipped at Southampton, which incurred additional expense. He considered that under ordinary conditions a Natal farmer would be able to obtain from 8s. to 10s. net each for the six months' old lambs. In continuation, the Minister pointed out that the 15th June was thought to be the latest date for lambing. Lambs should be weaned and killed when six months old, and should be shipped in November and December, arriving on the London market in December and January. He had been informed that New Zealand lambs did not arrive in England until March, which would ensure a good market for Natal shipments. He felt sure that they would agree with him that in obtaining even such a low estimate as 8s. and 10s. net for their lambs they were making a profitable transaction. With regard to the trial shipment that had taken place, Mr. Deane pointed out that the lambs sent only averaged 28½ lbs. (twenty-eight and three-quarter pounds). Had they, however, averaged an ordinary weight of, say, 34 lbs. each they would have realised at least 5s. per carcase more than they did. The Minister then read out the

estimated expenses and receipts calculated on the corrected basis assuming carcasses weighed 34 lbs. each and quality good. Rosetta to Point, per head:—Expenditure per head: *Natal charges*—Rail carriage, 1s. 3d.; killing, 4d.; cloth, 5d.; railway charges abattoir to store, 1d.; freezing, 9d.; freight, say, 2s. 6d.; total Natal charges, 5s. 4d. *London charges*—Shipping, charges, storage, and commission, say, 10d.; total, 6s. 2d. *Estimated receipts per head*: 34 lbs. at 5½d., 14s. 6¼d.; skin, sold in Natal, 9d.; fat, do., 6d.; head and pluck, do., 5d.; total, 16s. 2¼d.; less expenses, 6s. 2d.; balance, 10s. 0¼d. The Minister stated that he considered the rail charges of 1s. 3d. per head as too high, and that there would be a possibility of reduction there. He did not wish to raise false hopes, but he certainly did not think that he was over stating the case or painting it in too rosy a colour. He considered also that a reduction could be made with regard to the cloth by purchasing larger quantities. He did not wish to enlarge any further on the prospect of this lamb shipment, but thought they would realise the possibilities from what he had mentioned. He was pleased to see such a representative number of sheep farmers present and he hoped that before he left they would promise him a shipment of at least 600 to 800 sheep during November and December for the further trial shipments he wished to make this year, but he did not wish to limit them as to the number. He had been informed by the Rennie S.S. Line that the refrigerating chambers on their boats would hold from 600 to 800 head—16 head represented a ton measurement.

AGENT-GENERAL'S REPORT.

The Minister then read the following from a report that had been received from the Agent-General:—"At the beginning of December last (1906) the lamb market was firm owing to the supply falling short of the demand. On the 1st December, the average price for New Zealand lamb was 5½d. per lb. This was, however, only a nominal price, as there were no supplies from New Zealand in the market. The new season's lamb from Australia was 5½d. On the 8th December the price obtained for New Zealand lamb had risen to 6¼d., and the average price obtained for Australian was 5½d. On the 22nd December large supplies of Australian lamb came to hand, and the price fell to 5¼d. During the week succeeding Christmas the lamb market was dull owing to fresh arrivals from Australia, and the price receded to 5½d., falling to 5d. on the 1st January in 1907. The New Zealand shipments of lamb do not come forward in any quantity till March in each year, when the prices vary from 4¼d. to 5½d. You will note that no lamb from New Zealand is put upon the Christmas market, and it is generally considered an unfavourable time for sales. The Australian lamb is, of course, inferior in quality to the New Zealand. From all accounts received it appears that the season in Australia is at present a very favourable one for lambs."

In continuation, the Minister stated that he saw no reason why in three years' time Natal should not be in a position to ship annually half a million lambs. From the Agent-General's report he had just read they would see that he was not estimating tip-top figures in giving 8s. and 10s. as the net price to be received by the Natal farmer. In conclusion, the Minister stated that he would be pleased to reply to any questions on the subject.

In reply to Mr. Henwood as to the possibility of lower figures being received for the skin, etc., where large quantities might be coming forward, the Minister pointed out that the skins in question had been clipped and the lambs weaned. He considered any set-back in this direction would be compensated in the price obtained for the additional fat and wool, as also in the reduction of the charges he had mentioned.

With regard to Mr. Downing's request for expert information as to tailing and castrating, Mr. Deane promised to obtain same.

Mr. Moor suggested that Mr. Burford, the manager of the Government abattoir, should be sent up to that district to inspect the lambs set aside for export, in order to see that they were fit for the London market. He stated that he would be pleased if Mr. Burford made his (Mr. Moor's) home his headquarters. He would be pleased to supply him with a horse to enable his visiting the different farmers. He thought it important to have the advice of a competent man on this point. He further suggested that the Minister should find out as to the freight charged New Zealand and Australia by the shipping companies with regard to export of sheep in those countries. It was necessary that the shipping charges should be reduced if the Natal export of lambs was to be a thorough success. Mr. Moor confirmed what the Minister had stated as to the first trial shipment of lambs. The Native rebellion had intervened, and it had been impossible for the Government to put the shipment through at the time they had intended. He had picked out 100 for the shipment, but, owing to the unavoidable delays taking place, he had sold them. Afterwards, when he learned from the Government that all arrangements had been made for the shipment, he got Mr. Abbott to come up and have a look at those he intended sending. They had, however, already been clipped and weaned, and, consequently, the results could not be looked upon as of any real use. He agreed with Mr. Deane in considering the railway rate of 1s. 3d. per head as too high, but he thought that unless Government succeeded in reducing the shipping charges, the industry should not be encouraged. He felt confident, however, that Government would be successful in reducing the charges in question. In conclusion, Mr. Moor stated that unless they got an outlet for their sheep there would be a still bigger reduction in the price than had already taken place.

After a general discussion on the subject about a thousand lambs were promised by gentlemen present.

EXPORT OF APPLES.

The Minister stated that there was one other subject he wished to bring to their attention, and that was with regard to the export of apples. A trial shipment had been made in April of 400 apples, known in England as "russets," which realised 8s. per 100. Mr. Deane then read the Commercial Agent's report concerning this shipment, as follows:—

"These apples arrived at Nine Elms on Monday morning, the 4th May, where I inspected them. Had the fruit been properly and carefully packed, there would have been little to complain of as to condition on arrival. The boxes were stowed in No. 1 lower deck. The fruit opened very wasty, nor the best size, the wood wool packing was indifferently done, and in securing the battens to the boxes the fruit was nailed also, the nails being much too long. In packing apples, wood wool need only be used as a buffer (if at all), and the fruit should be simply wrapped in special apple paper. As to the apples themselves, they are much too large to appeal to the buyers here. They cannot be used for dessert, and are not acceptable as cookers. Another flagrant mistake was the wastage of freight. The consignment only measured 22 ft. 4 in., but the minimum rate of 25s. as for a ton was charged. It may be possible to arrange a refund of half at the Durban end. I tried to secure it this end but was informed that adjustment could only be made in Natal. I have got together a good deal of information on the subject of apple export, also samples of wrappers, photo showing style and capacity of the box generally adopted, but am waiting other particulars as to freight, stowage, varieties, etc., on receipt of which I will report further. The seven packages (21 boxes) of apples realised 42s., which, considering the bruised and wasty condition, is a fair price. The salesman's total charges amount to 4s. 11d., or 11½ per cent. Had the fruit been satisfactory, it might have secured double the price, in which case the London charges would have been only 10 per cent. Wasty and badly priced fruit naturally increases the expenses on this side, and makes results doubly disappointing."

Appended is Mr. T. J. Poupart's report:—"Re seven bundles containing 21 boxes of apples received from Natal on May 4th., I am sorry to inform you that this was not at all a satisfactory shipment. A large percentage of the fruit was entirely wasty, a lot having been spoilt through the careless way in which the battens used for nesting the boxes together had been nailed on. We found that in many instances nails had pierced the apples, and every one so damaged had gone rotten. However, were these apples to arrive here in a perfectly sound condition, they would be of very little use, as, for a golden russet, they are much too large and coarse, with no quality about them at all."

The Minister pointed out that in their district apples grew magnificently. At a lunch at which he had lately been entertained he had been

astonished at the variety and quality of the apples they grow so successfully. He felt confident that they would get excellent results by exporting dessert apples, such as the "Northern Spy," and if the shipment was conducted on proper lines, they would obtain further revenue for their fruit-growers.

In the discussion that followed, a number of the speakers referred to the serious damage done to the fruit trees in their district by hail.

Mr. Hutchinson was of the opinion that there were too many of the ordinary apples grown which would not be suitable for the English market. He considered, however, that if they went in more for the superior kinds they would be able to go in for exporting them.

Mr. Henwood suggested that Government should send an expert round to advise them as to the variety of apples they should grow.

The Minister stated that he would be pleased to send Mr. Fuller up to advise them as to what varieties they should grow for the English market. He considered that a wire netting shield would to a great extent protect their trees. With regard to the fruit fly, the Minister referred to a species of wasp that was being propagated, and from which great results were anticipated. It was intended to set loose this wasp in the different districts affected by this fly, and it was thought that it would not be long before the fly in question would to a great extent be exterminated.

After a further discussion on the subject, the following gentlemen promised to supply the Minister with a few boxes of different varieties of apples for export, viz., Messrs. C. Green, J. Henwood, G. Hutchinson, S. Stead, Menan Bros., and Colonel Crompton.

WATTLE WOOD BOXES.

In concluding his remarks, the Minister stated that he had travelled up to Rosetta with Mr. Newmarch, and would ask him to be good enough to inform the meeting what he had told the Minister regarding certain wood he had recently been utilising for making his boxes. His one desire was to make their undertakings more profitable than they were. In this instance they would hear that Mr. Newmarch had paid £3 15s. for a *Pinus insignis* tree about 18 years old. Presuming they had 200 of these trees on one acre, they would obtain a return of £30 a year for eighteen years.

Mr. Newmarch, in addressing the meeting, stated that, as they were aware, he was making boxes with wattle wood. It had been brought to his notice that the ends of the boxes would have to be made with a soft wood. He decided to try the *Pinus insignis*, and, as some of these trees were growing on a neighbour's property, he obtained permission to cut one down. He found the wood very suitable for what he wanted, and had paid 9d. a cubic foot for the wood, which totalled £3 15s. for the

tree. Many people did not consider it worth while to grow this tree, as it generally died when 17 years old. He had found the wood as soft as deal, and as good as the best deal. He considered that 200 of these trees could be grown to the acre, and he thought that there were few crops that would give such a return. The price of deal in Natal varied from 2s. to 2s. 6d. per cubic foot.

Colonel Crompton stated that he had had experience with these trees, and, though he did not wish to deprecate the *Pinus insignis*, he thought the *Pinus pinaster* would do better. It grew splendidly, though more slowly.

The Chairman then declared the meeting ended.

Mr. Downing proposed a vote of thanks to the Minister for having come up, which was seconded by Mr. J. Moor, M.L.A., who stated that he could promise the Minister that if the Government carried out their part of the contract with regard to the reducing of rates as promised, they on their part, would do theirs. (Applause.)

The Minister, in a few words, expressed his thanks for the very kind reception he had been accorded.

EXPORT OF POTATOES.

REPORT FROM COMMERCIAL AGENT.

A letter has been received by the Minister of Agriculture from the Commercial Agent in London (Mr. Francis Harrison), giving the results of further inquiries which he has made in connection with the export of Natal potatoes. Mr. Harrison also sends a copy of a letter which he has received from Messrs. Nothard & Lowe, of 33, Tooley Street, London, S.E., a long-established firm who not only handle very large consignments from the Canary Islands, but also ship the bulk of the seed to those Islands. Mr. Harrison visited Messrs. Nothard & Lowe, and he states that they are quite of the opinion that an export trade is possible from Natal. In their letter this firm state:—

“We think that the most suitable variety of potatoes to be grown in Natal for the English market would be the ‘Royal Kidney’ and the ‘Up-to-Date.’

“The most suitable time for these potatoes to arrive on the London market is during the months of February, March, April and May. This is the same time as the Canaries arrive. It would be advisable to pack them in cases to contain about 70 lbs. of potatoes.

“The boxes should measure about 29 in. x 16 in. x 8 in., outside measurement. The box should have a middle partition, but, if they were sent in smaller boxes of about 56 lbs. net, the middle batton would not be necessary, *providing the wood was strong*. The box should be lined inside with one sheet of newspaper around the bottom, sides and top.

also the potatoes should be packed together with peat dust. The peat dust should not be quite dry but a little moist as this keeps the potatoes fresh.

"The potatoes should be graded into *one's*, *two's*, and *three's*. The *one's* should be the large size, the *two's* the medium, and the *three's* the small. . . . The *very large* No. 1's should not be sent to this market as they are very difficult to sell.

"We recommend the growers to try the 'Royal Kidney' potato as it is a kidney shape."

Another important firm, Messrs. T. & J. Moor, of Bescar Lane, near Ormskirk, who are shippers of seed potatoes to, and large exporters of new potatoes from, Las Palmas and Teneriffe, have, Mr. Harrison states, written to him that the only potato that has proved thoroughly reliable for those Islands up to the present is the "Up-to-date," grown on the black moss land peculiar to the district of Ormskirk, and which they can recommend with safety (a northern grown seed potato is generally recognised as better than a midlands or southern grown for exporting). There are, however, other varieties than "Dates" which might be tried in small quantities.

In regard to packing, the same method as already recommended should be followed, that is "pack the potatoes in boxes along with *black* peat moss dust." Messrs. Moor also recommended a mixture of peat-dust and sawdust; damp with water before using to keep the potatoes moist during transit.

From further inquiries which he has made Mr. Harrison states that "there appears to be a little dubity in regard to the 'Snowdrop' as a suitable tuber to grow for export, and while the 'Magnum Bonum' is better, the 'Royal Kidney' and 'Up-to-Date' are generally considered the most profitable to recommend."

With regard to peat-dust for packing, the British Moss Litter Co., of 61, Gracechurch Street, have quoted 32s. 6d. per ton (net), f.o.b. Liverpool. The peat dust is packed in 8 or 10 bales to the ton and covered with hessian.

In conclusion, Mr. Harrison writes: "If the potatoes are sent forward regularly and in any quantity, right season, proper size and condition, they should command a quick sale, and in that event I do not think I should have much difficulty in keeping the London charges at about 10 per cent., which is slightly lower than my previous estimate."

Articles of food and drink to the value of £1,286,836 were imported into Natal during the eight months ended 31st August. During the same period of last year the value of such goods imported was £1,650,538.

Production and Utilisation of Wattle Bark.

SOURCES OF THE BARK AND MANUFACTURE OF EXTRACT.

THE Department of Agriculture has been favoured, through the Commercial Agent, with an advance copy of the *Bulletin* of the Imperial Institute, containing an article on the Production and Utilisation of Wattle Bark. This has been forwarded in connection with previous information communicated through the Commercial Agent and published in the course of the last few issues of the *Agricultural Journal*.

In the introduction of the article the writer remarks that the wattle or mimosa barks of commerce are derived from several species of *Acacia* indigenous to Australia, whence the barks have long been exported to Europe for use as tanning materials. It is interesting to know that the name "wattle" was bestowed on the acacias in Australia owing to their willow-like habit and from the fact that they were used in the early days of the Colony for binding hurdles together, generally to serve the same purposes as the wattles of Europe.

Formerly the supply of wattle bark, we are told, came almost exclusively from Australia, and especially from South Australia and Tasmania, but in 1880 wattles were introduced into Natal, and within the last ten years or so the plantations of Natal have begun to supply a preponderating share of the material. Similar progress has not been made in Australia, but this is probably partly due to the fact that the Commonwealth exporters have relied principally on natural forests and have not practised cultivation of the wattle tree to the same extent as the Natal growers, though recently increased attention has been given to the formation of wattle plantations in Australia.

After some useful notes on cultivation, the writer proceeds to enumerate the countries in which wattle bark is produced. These we find consist in the main of Australia, New Zealand, South Africa, East Africa, India and Ceylon:—

AUSTRALASIA.

South Australia.—The wattle bark of South Australia is almost exclusively derived from the "broad-leaved or golden wattle," *A. pycnantha*. This bark is one of the richest of tanning materials, although recently the eucalyptus "mallet bark" of Australia has been found to overstep it in actual tannin content. It is found chiefly on the Adelaide hills and plains, but in the north of the Colony a narrower leaved variety exists which is of slower growth and yields bark of less value. The broad-leaved

wattle bark of South Australia generally contains from 40 to 45 per cent. of tannin, tans very quickly, and produces a good light-coloured leather. It is worth about £8 to £9 per ton at present.

New South Wales.—This Colony at one time produced and exported large quantities of wattle bark, but of recent years the export has been nearly lost, although the price per ton has risen from £6 in 1890 to £8 at the present date. Most of the bark is "green" or "black" wattle, and contains about 35 to 40 per cent. of tannin. *A. pycnantha* cultivation is practically confined to those parts of the country bordering on South Australia and Victoria.

Victoria.—In Victoria no other crop is regarded as so profitable as wattle, especially for poor soil. Thousands of acres are under cultivation, and Victoria is the greatest producing area of black wattle bark in the Commonwealth.

Tasmania.—This island possesses large natural supplies of black wattle, and at one time was the chief Australasian source of this variety. Owing to indiscriminate destruction of the forests and failure to systematise the planting of fresh trees, Tasmania has lost considerable ground, both in the quantity and value per ton of bark exported.

The typical analyses of Australian wattles given herewith are taken from results obtained by Blockley (*Journ. Soc. Chem., Ind.*, 1902, 21, 159).

ANALYSES OF AUSTRALIAN BARKS.

Botanical Source	Local Name	Source	Tannin	Non-Tannin	In-soluble	Moisture
<i>A. pycnantha</i>	Golden Wattle, No. 1 Special	S. Australia	per cent. 49·5	per cent. 9·4	per cent. 29·9	per cent. 11·2
<i>A. pycnantha</i>	Golden Wattle, No. 2 Ordinary	S. Australia	40·2	9·0	39·6	11·2
<i>A. decurrens</i> var <i>normalis</i>	Sydney Green Wattle	St. Mary's, (N.S.W.)	41·4	7·9	39·2	11·5
<i>A. decurrens</i> var <i>leichhardtii</i>	Green Wattle	Bateman's Bay, N.S.W.	38·5	9·1	41·4	11·0
<i>A. decurrens</i> var <i>pauciglandulosa</i>	Green Wattle	Bateman's Bay, N.S.W.	36·1	7·8	44·5	11·6
<i>A. decurrens</i> var <i>mollissima</i>	Black Wattle	...	38·3	4·4	46·2	11·1
<i>A. penninervis</i>	Hickory Bark	Bateman's B.	37·7	5·2	46·1	11·0
<i>A. binervata</i>	Black Wattle	Cambervarra	30·2	6·7	52·0	11·1
<i>A. dealbata</i>	Silver Wattle	N.S.W.	12·2	4·3	71·9	11·6

Queensland and Western Australia.—Among the wattles termed "black," there are several mountain hickories of much less importance than *Acacia decurrens*, although containing from 30 to 35 per cent. of tannin. Chief amongst these is *A. penninervis*, which may become of great commercial importance, especially in Queensland, where it is very abundant. At the present time Queensland produces and exports comparatively little wattle bark. In the last few years Western Australia has exported greatly increasing quantities of wattle bark, although up till 1902 none at all was produced.

New Zealand.—Wattle plantations in New Zealand for the production of tanning bark occupy an area of about 5,000 acres in the Auckland district. The black wattle is the only variety planted.

NATAL.

Being known to grow quickly, wattles were first introduced into Natal as a shade tree and wind break, more especially as a protection for cattle. The value of their bark as tanning agents was not recognised until several years later. Natal wattle is nearly all *A. decurrens*, although the "golden" variety is also grown to a limited extent.

The chief centre of the black wattle cultivation was originally in the Noodsberg district, but at present the greater part is grown round about the Umvoti, although wattle plantations are scattered throughout the central portion of the Colony, and largely along the Railway from Pietermaritzburg to Greytown. One of the largest wattle estates, the Town Hill plantation, covers over 3,000 acres of hilly uplands near Pietermaritzburg.

At present over 30,000 acres in Natal are planted with black wattle, and it is confidently expected that within the next five years the production will be trebled.

CAPE COLONY AND THE TRANSVAAL.

The pronounced success of the cultivation of wattle trees in Natal has caused attempts to be made to place wattle cultivation on a commercial basis in other South African Colonies, notably in Cape Colony and the Transvaal. Several samples of Cape Colony wattle bark have been examined at the Imperial Institute, and found to be rich in tannin and of good quality.

GERMAN EAST AFRICA.

The cultivation of *A. decurrens* in German East Africa has already passed the experimental stage, and as early as 1904 samples of bark were obtained, which proved to be of satisfactory quality. The seed used in these plantations was obtained partly from Natal and partly from Australia, but as no special care was taken in its selection very mixed results have been obtained. There seems to be no doubt, however, that German East Africa is well suited for wattle growing, and that in the near future it will be able to compete with Natal and Australia for the supply of bark.

Experimental cultivation of the black wattle has also been undertaken in British East Africa, but so far nothing is known as to the quality of the bark obtained.

The accompanying analyses of African wattle barks were partly carried out in the laboratories of the Imperial Institute. In those marked* the tannin was estimated by the bell-filter method.

ANALYSES OF AFRICAN BARKS.

Botanical Source	Source	Tannin	Non-Tannin	Ash	Moisture
		per cent.	per cent.	per cent.	per cent.
<i>A. decurrens</i> †	Warburg, Natal	35·2	7·3	1·6	11·7
do.	Natal	37·8	9·3	1·5	9·5
do.	do.	35·2	10·3	2·8	11·3
do.	do.	39·8	9·9	2·3	9·6
do.	do.	36·8	10·3	2·6	10·4
do.	Fort Conyngham, C.C.	35·4 *	12·0	1·8	11·4
<i>A. pycnantha</i>	Dept. of Agric., C.C.	40·1 *	13·0	1·5	10·1
<i>A. saligna</i>	do.	26·4 *	12·1	4·0	11·1
<i>A. horrida</i>	Alexandra, C.C.	18·3 *	8·3	4·5	11·0
<i>A. decurrens</i>	Eastern Conservancy, Cape Colony.	44·1 *	7·1	1·8	10·9
(Mimosa Bark).	Big Umgagi	18·0 *	7·5	5·3	12·4
<i>A. decurrens</i>	Amani, G.E.A.	50·95	8·54	...	2·95
do.	do.	39·28	6·29	...	4·88
do.	do.	38·12	8·35	...	10·76
do.	Wilhelmstal, G.E.A.	47·32	7·52	...	11·02
do.	Kwai, G.E.A.	44·77	8·04	...	8·75
<i>A. mollissima</i> ‡	Amani, G.E.A.	44·91	5·85	...	8·71
do.	do.	38·61	7·27	...	10·37
do.	do.	46·78	9·43	...	9·62
do.	Kwai, G.E.A.	38·14	13·51	...	8·22
do.	do.	46·39	11·76	...	6·01
<i>A. dealbat</i>	Wilhelmstal, G.E.A.	17·42	6·54	...	11·15
do.	do.	18·51	10·96	...	12·86
do.	do.	18·48	10·55	...	11·92

† Probably all var *mollissima*. ‡ *A. decurrens* var *mollissima*.

* Estimated by the bell-filter method.

INDIA AND CEYLON.

Several varieties of wattles have been acclimatised in different parts of India, and in the Ceylon hills *A. decurrens* and *A. dealbata* are now plentiful. Although the barks of these trees are used locally for tanning purposes, no attempt has been made to grow or harvest the bark for export.

WATTLE BARK EXTRACT.

The writer of the article in question then proceeds to discuss the question of the extraction of tanning. His remarks in this connection are of particular interest at the present time. He says:—

Of late years the use of bark extracts has largely taken the place of ground barks for tanning purposes. Extracts are preferred by tanners, since they are quicker and more regular in their action, and there is practically no waste in their use. Quebracho, valonia, oak bark, sumac, and mangrove are all largely utilised in the form of liquid and solid extracts, and their application in this form is being greatly extended from year to year.

Besides these advantages to the tanner, it is clear that advantage also accrues to the producer, since he is able by this means to utilise materials deficient in tannin, and is able to compete in distant markets otherwise closed to him by reason of high freights.

These considerations have been of late the subject of much discussion in the wattle producing countries, and notably in Natal. The Union already referred to appears to have decided that the best chance for the expansion of the industry lies in the direction of manufacturing extract in the centre production of the bark.

MANUFACTURE OF WATTLE BARK EXTRACTS.

Tanning extract can be placed on the market in either the liquid or solid form. Where it is possible to concentrate the extract sufficiently without decomposition, it is more advantageous to prepare the solid extract, since this is cheaper to pack and to transport. The process of making extracts resolves itself into several sections which may be considered *seriatim*.

Leaching.

This is the technical term describing the process of dissolving the tannin out of the bark. For this purpose the latter is ground to a fine powder to facilitate extraction. The system of "leaches" or extractors now considered the best admits of continuous working. Pits, or tubs sunk in the ground and built in series or "batteries" of six to eight, are packed with the ground bark, and the liquor obtained by percolation with water in one pit is used to extract the bark in the next leach, and so on.

until a strong liquor is obtained. Continuity of action is obtained by keeping a high head of water or spent liquor in the end vat of the series, thus forcing the liquor forward from vat to vat by means of a series of vertical pipes. The spare vat may be heated by steam if required.

Wattle bark is best extracted at a temperature of about 60, beginning cold and raising the temperature gradually.

The object of the extract manufacturer should be to remove the maximum amount of tannin and the minimum amount of colour in the minimum of time and with the least possible quantity of water, since the water will later on have to be evaporated.

Decolorisation.

As in the case of most extracts, it is probable that wattle extract will generally be improved by decolorisation. The agent usually employed for this purpose is dried blood, but pastes of blood-albumen, alumina, and casein are also occasionally used.

The blood of albumen is dissolved in a little water, added to the vat liquor obtained as described above, and well mixed. On raising the temperature to 70 degrees the albumen coagulates and carries down much of the colouring matter, which is allowed to settle, after which the clear liquid may be drawn off for evaporation.

Decolorising always occasions a certain loss of tannin, and for this reason is dispensed with when not absolutely necessary. Sulphurous acid is frequently used to "brighten" tan liquors, but its use should be unnecessary in preparing wattle bark extract; it is said to be disadvantageous in various ways.

Concentration of the Liquor.

The liquors from the leaches or decolorising vats are concentrated by evaporation. Up to a certain stage it is possible to use for this purpose "spray" machines of the Yaryan type which concentrate the liquid with as little access of air and at as low a temperature as possible. This result is obtained by passing the liquid into copper tubes working under reducing pressure and kept at the required temperature. The fluid is immediately converted into spray and swept forward into a separating chamber. In this way the liquid can be concentrated up to a specific gravity of 1.1 to 1.2 without having been heated above 70 degrees. The final evaporation of the extracts is conducted in ordinary vacuum pans. It must be understood, of course, that in all stages of its manufacture the extract must be kept from contact with iron. The apparatus is usually constructed of wood and copper.

In the foregoing account of extract manufacture an outline of the process only has been attempted, and for fuller details both of the process and of the plant required, Prof. Proctor's handbook already referred to might be consulted with advantage.

Considerable quantities of wattle extract are already manufactured in Australia, and a factory has been established in South Australia for its preparation, chiefly from branch bark, which is too small to pay for stripping. A fluid extract is prepared which contains 60 per cent. of water and about 38 per cent. of soluble tannin. Practical experiments are also being conducted in Australia with a view to the preparation of a tanning extract from wattle leaves. It is probable that where wattle bark extract manufacture is contemplated it would be advantageous to adopt the plan of building a central extract factory conveniently situated with respect to a group of plantations, the produce of which could be worked up in the factory. This plan has been worked successfully in Germany in the manufacture of beet sugar, and more recent instances of its success are the central ginneries for treating seed cotton in West Africa and the West Indies and elsewhere.

THE WORLD'S CROPS.—Harvesting operations are now fairly well advanced in this country, but the great wheat-producing countries have yet to reap the harvest which is so important to the world. It is difficult to gauge the extent to which Nature has favoured the farmers' labours, but it seems beyond question now that the Canadian crop, which was bad last year, will be the largest that has been gathered. The same remark, unfortunately, cannot be made with regard to the crop of the United States, and though it will be large, it is not likely to be as large as was hoped in the early stages. When it is remembered that the world's consumption grows steadily, there seems some ground for the belief, confidently held in well-informed quarters, that prices cannot fall as yet much below their present level. However, as very good weather reports continue to come from Argentina, India, and Australia, there seems to be a fair prospect of really cheap bread next year. In the current number of the *Corn Trade News* crop estimates from all over the world are given. In U.S.A. the reports of the spring wheat crop are improving, and estimates of the crop of the three North-Western States vary from 175 to 205 and 215 million bushels. In Canada, information supports the view that the crop will be a bumper one, but, on the other hand, it is stated that the official view is too optimistic. Weather reports from Russia are favourable. A heavier harvest is expected in Roumania, but our own report from France is not so satisfactory. . . . It is feared that France may have to import wheat this season. South-Eastern Europe will yield far more than last year; but Mr. Broomhall's report, after a personal visit of the Russian crops, is discouraging.—*The Economist* (Aug. 22, 1908).

Blood Manure.

By ALEX. PARDY, F.C.S., etc., Analyst.

It is owing to the enterprise of Mr. Wm. Merritt that a new industry—a small but important one—has been added to the growing list of the Colony's progressive marches by way of developing her internal resources.

Mr. Merritt has arranged for the purchase of blood from the Government Abattoir Maritzburg, and has already succeeded in preparing dried blood manures of high value. Three samples representing very uniform products were received at the Laboratory, Cedara, and found on examination to contain:—

	I.	II.	III.	
Moisture	14.50	18.01	17.86	per cent.
Organic and volatile matter	74.69	73.84	73.01	"
Ash and sand	10.81	8.15	9.13	"
Nitrogen	10.21	11.53	10.97	"

The numbers refer to samples I. and II., which had been treated with sulphuric acid (No. II. receiving as much acid as No. I.), and III. an ordinary dried blood.

In commercial samples of dried blood the moisture ranges from 13 to 14 per cent. and the nitrogen from 9 to 14, the average of the latter lying between 11 and 12 per cent.

Dried blood has been imported into Natal in small quantities and has been on the market for a number of years, but little demand appears to have been created for its use, partly, no doubt, owing to the high cost of importing it and to unfamiliarity with its value and uses. As an ingredient in mixed manures it has had a wider distribution. I understand that the price of the imported article has been considerably reduced this year.

The great value of this manure is due to its nitrogen—usually classed as organic nitrogen. It is insoluble in water, and in this respect differs from nitrate of soda and sulphate of ammonia: but owing to the rapidity with which blood decomposes in the soil, the nitrogen becomes quickly available, much more so than that in bones or other organic manures. It has thus a relatively high place as regards availability, and is usually classed next to sulphate of ammonia in that respect.

Nitrate of soda yields about 16 per cent. of nitrogen, sulphate of ammonia 20 per cent., dried blood about 11.5 per cent., and bones 3 to 4 per cent., so it will be seen that it is one of the more concentrated nitrogenous manures. It is particularly suited to some crops, and in fact may

be applied to most crops standing in need of a nitrogenous manure. Among those to which it may be applied with advantage are fruit trees, cereal crops (wheat, mealies, etc.), sugar cane, turnips, tobacco and most vegetables. However, when used alone care has to be taken not to place the manure too intimately in contact with the seed or to give too heavy dressings; its heat and rather rapid decomposition are apt to react unfavourably on any seed it may surround. Broad-casting and working in just before or at the time of sowing is likely to prove the better plan.

For general use its greatest effect is likely to be obtained when applied in conjunction with other manures—with superphosphate or bones it forms an extremely useful manure in this country; and the addition of a potash salt to this mixture results in a complete manure, supplying the three essential constituents, namely, nitrogen, phosphoric acid, and potash.

Mr. Merritt writes regarding the manure which he is now in a position to supply, that he is prepared to sell it f.o.r. Maritzburg at £10 per ton, and that it can be had in bags of 100 and 150 lbs., or, to meet the requirements of small farmers and market gardeners, he is willing to put it up in 25 or 50 lb. bags at the same rate.

Cape Fruit Industry.

PROGRESS IN 1907-8.

LAST month we gave extended notice to the latest report of the Cape Superintendent of Agricultural Co-operation, showing the progress which Cape farmers are making in the adoption of co-operative principles; and we promised in this issue to deal with the Cape fruit industry. With regard to the export of fruit, we learn from Mr. Hannon's report that it was decided to continue, for the season 1907-8, the Government Experimental Fruit Export Scheme brought into operation on the 21st January of last year, and that, accordingly, a conference took place with representatives of the fruit exporters of the Colony, and an Advisory Fruit Committee was appointed, consisting of Messrs. H. E. V. Pickstone, O. C. M. Barry, A. J. Chiappini, Major Micklem, and Dr. Viljoen, with whom the details of all questions affecting the shipment of fruit, under the Government scheme or otherwise, were discussed. It was agreed that the general provisions of the scheme of inspection for 1906-7 should be continued for 1907-8, and accordingly Government Notice No. 1,221 of the 4th November, 1907, was issued. An arrangement was made for the

supply of fruit boxes, woodwool, cleats and nails to shippers, and public tenders were invited from firms willing to supply the necessary materials on the C.O.D. system. Conferences were repeatedly held with the Union-Castle Company, and much correspondence passed relative to the provision of cold storage accommodation in mail and intermediate steamers for the conveyance of fruit, but in view of the difficulty of giving any definite estimate of the quantity which would probably be forwarded during the season, the shipping company was unwilling to incur further expense in the enlargement of its cool room space on its ships. It is anticipated that no difficulty will arise with properly selected and well-packed fruit, but the Fruit Inspector has been instructed to take rigorous measures with consignments of inferior character.

The duties of the Advisory Committee were:—

- (a) To advise the Government from time to time on all matters concerned with the packing, transit, and export of fruit;
- (b) To frame, with the approval of the Government, such regulations as may be necessary with reference to the duties of the Government Fruit Inspectors;
- (c) To adjust from time to time any difficulties that may arise affecting the inspection, cold storage and marketing of fruit, and make such recommendations as may seem proper for the improvement of the export fruit trade of the Colony.

The Committee suggested that the policy to be pursued for the forthcoming season in the marketing of Cape fruit should be such that the Trades Commissioner would in every possible way work in harmony with the existing agents of the Fruit Exporters' Association, and that frequent consultations should take place between these gentlemen. This suggestion was accepted by the Government; and Mr. Hannon reports that the most harmonious understanding subsists between Mr. Chiappini and the representatives of the Fruit Growers' Association in London.

The Government approved of an arrangement by which a cable should be despatched to the Trades Commissioner after each shipment of fruit, giving particulars of all consignments forwarded, and this has been regularly done each week, a special code having been brought into operation for the purpose.

Mr. Hannon states that only two grades of fruit are recognised as eligible for the Government Brand during the season 1907-8. The third-grade fruit which was dealt with last year is not branded, and this arrangement, it is remarked, seems to have given universal satisfaction.

ITINERANT INSTRUCTION IN FRUIT PACKING.

With a view to the encouragement of the most up-to-date methods of fruit packing, and in order to secure that only properly selected and graded fruit should be forwarded to European markets, two Itinerant Instructors in fruit packing were appointed, and their services were

available for demonstration work among farmers from the 1st January to the 31st March, 1908. In order to facilitate the work of these instructors, and to render it as widely useful as possible, meetings will be arranged in the various fruit-growing districts, which they will attend, and at which all the details affecting successful fruit export will be fully expounded.

EXPORT OF CITRUS FRUITS.

An interesting experiment was carried out during the months of July and August last, with a view to determining whether citrus fruits grown in the Colony could profitably be exported to London. Four consignments were forwarded as follows:—

- (a) 30 cases of oranges, 48 in each, and 21 cases of naartjes, 70 in each;
- (b) 17 cases of oranges, 48 in each, and 8 cases of naartjes, 105 in each;
- (c) 25 cases of naartjes, 48 in each; and
- (d) 100 cases of oranges, containing 210 fruits in each.

This fruit was shipped in ventilated holds, and as deck cargo, and all reached London in perfectly sound condition. The reports of all the fruit factors who handled the fruit were most favourable, and the highest testimony has been received to the quality and superior character of the shipments. The prices in all cases were, however, too low to warrant a continuation of further consignments, and notwithstanding the much higher prices at which the fruit sold, as compared with that received in London from other parts of the world it could hardly be encouraged on a paying basis, having regard to the local prices for oranges and naartjes in South Africa. The oranges sent in consignment (d) realised 15s. 9d. per case, but the Trades Commissioner pointed out that this was exceptional, and could hardly be expected to be maintained. It was therefore decided that no further shipments of this fruit should be undertaken at the instance of the Government.

PRUNE GROWERS' ASSOCIATION.

This Association has changed its headquarters from Koelenhof Siding to Wellington Station, where much more commodious and suitable premises have been secured. The prune crop of this season has been very much smaller than last year, but nevertheless 80 tons of very high grade fruit have been prepared. During the present year the Society will be able to meet practically the whole demand for dried fruit in South Africa. The sales of dried prunes naturally vary with the seasons, output ranging from 10 tons in the "fresh fruit" months, to 30 tons per month when the fruit season is "off." Agencies have been established throughout the whole of South Africa, and the high character of the article produced by this Association has, Mr. Hannon remarks, been universally recognised.

The Progress of Agriculture.

By WILLIAM SAUNDERS C.M.G., LL.D.

I.

[IN the course of an interesting address to the Royal Society of Canada recently, Dr. Wm. Saunders, C.M.G., the Director of the Dominion Experiment Farms, dealt with the development of agriculture and agricultural progress during the last twenty years or so. We propose to publish this address in the *Journal* in two sections: one dealing with the development of agriculture; and the second with the progress of agriculture during recent years. The first part we give below, and the second will appear in the next issue of the *Journal*.]

EGYPTIAN AGRICULTURE.

Every reader of the Old Testament is familiar with the references to Egypt as a land rich in corn, one that produced sufficient for its own population and a surplus also for export to neighbouring countries. The patriarch Jacob, during the time of great famine, sent his ten sons to buy corn in Egypt, saying "Behold I have heard that there is corn in Egypt, get you down thither and buy for us from thence, that we may live and not die." Profane history bears testimony to the skill of the farmers of ancient Egypt and this skill was exercised under favourable conditions. The soil was naturally fertile, and was still further enriched by the annual overflow of the Nile.

The nomads of the patriarchal ages, while mainly depending for sustenance on their flocks and herds, also engaged, in some instances, extensively in the tilling of the soil. Isaac combined tillage with pastoral occupations, for we read that he sowed in the land of Gerar and reaped a hundred fold. Job also is represented as having, besides immense possessions in flocks and herds, 500 yoke of oxen which he employed in ploughing and in a very great husbandry. The Israelites were one of the great agricultural nations of antiquity, much the larger proportion of them being occupied in that pursuit. Their principal crops were wheat, barley, spelt, millet, beans and lentils. They also had vineyards and groves of olive and fig trees. Theirs was a land of corn and wine, a land of bread and vineyards, of olive oil, milk and honey.

THE ROMANS AND AGRICULTURE.

Amongst the ancient Romans agriculture was highly esteemed, and pursued with earnest love, and devoted attention. They were a thoroughly agricultural people, and it was only at a later period that trade and arts

were introduced among them, and even then agriculture occupied by far the most prominent place. Their love of agricultural pursuits survived for a very long period, and when at length their boundless conquests brought unheard of luxury and with it the corruption of their morals, the noblest minds among them were strongly attracted towards the purer and simpler life of the ancient agricultural times.

The words which Cicero put into the mouth of Cato give a fine picture of the enthusiasm of the Romans in agriculture, "I come now," he says, "to the pleasure of husbandry in which I vastly delight. They are not interrupted by old age, and they seem to me to be pursuits in which a wise man's life would be well spent. The earth does not rebel against authority, but gives back with usury what it receives. I am charmed with the nature and productive virtues of the soil."

Can those old men be called unhappy who delight in the cultivation of the soil? In my opinion there can be no happier life, not only because the tillage of the earth is salutary to all, but from the pleasure it yields. Nothing can be more profitable, nothing can be more beautiful than a well cultivated farm. In the later ages of the Empire, agriculture was neglected, and those engaged in it were regarded with disdain, the supplies of food for overgrown Rome being drawn mainly from Egypt, Sicily and other provinces.

A PERIOD OF RETROGRESSION.

Under the Goths, Vandals and other barbarian conquerors, agriculture in Europe during the middle ages seems to have sunk into the lowest condition of neglect and contempt. During the greater part of this long period, the population of Europe was divided into two great classes. By far the larger one was composed of bondmen, without property or the means of acquiring it; the other class consisted chiefly of the great Barons who owned large areas of land, and who also owned their retainers, who were the tillers of the soil. It was the ignorant bondmen on whom rested the burden of the cultivation of their master's land. The retainers, however, were more frequently employed in laying waste the fields of their master's rivals than in cultivating their own. Subsequently the practice began to prevail of renting portions of the land to the peasant, who paid his rent in grain or cattle. Under this arrangement the land began to be more carefully cultivated, and to yield greater profits to the owners.

Wheat was the most valuable grain grown, but must have borne but a small proportion to other grain crops. The extravagant prices at which wheat was sometimes sold give evidence that its consumption was probably confined to the wealthy. Rye, barley and oats furnished the food of the great body of the people in Europe.

There was not as much variety in the food of the people then as there

is now. The potato was introduced into Britain from America in 1586 and grown that year on the estate of Sir Walter Raleigh in Ireland, near Cork, but this valuable tuber came very slowly into use. In 1663, seventy years later, the more general growth of the potato as food for the people was strongly urged by the Royal Society of London, but even that important endorsement did not bring it rapidly into favour, and not much more than a century has elapsed since its cultivation on a large scale has been general. It was not until the reign of Henry VIII. that carrots and other edible roots and plants began to be cultivated in England. Prior to this the small quantities of vegetables used were imported from Holland and Flanders. Hume, in his *History of England*, speaking of this period, says that Queen Catharine when she wanted a salad was obliged to despatch a messenger to Holland to secure the necessary material.

THE AWAKENING.

Early in the 16th century, following the invention of printing and the revival of learning, agriculture partook of the general awakening, and during the course of this century several important treatises on the subject appeared, written by men who engaged eagerly in this neglected and hitherto despised occupation. The information thus given did not, however, produce a rapid change. Up to the middle of the 17th century it is said to have been a common practice to sow successive crops of grain on the same land until it was utterly exhausted, and then to leave it foul with weeds to recover some measure of its fertility by an indefinite period of rest.

During the latter part of the same century the rotation of crops began to be practised under the name of alternate husbandry, and before the end of that century great improvement had taken place, not only in the methods adopted for the growing of crops, but also in the quality and breeding of cattle and sheep. The value to subsequent crops of the ploughing under a clover to enrich the soil was also known and more or less practised at this early period.

PURVEYANCE IN GREAT BRITAIN.

One of the great burdens which rested on agriculture in early times in Great Britain was the levying of Purveyance. What was called the larger Purveyance involved the obligation on the nearest farmers to furnish at the current prices, provisions, carriages, etc., in time of war to the King's armies, houses and castles. The smaller Purveyance included the furnishing of the necessary provisions for the household of the King when travelling through his dominions. These the tenants on farms belonging to the Crown were obliged to furnish gratis, and this practice came to be adopted by the barons and great men of the Kingdom, in every tour which they thought proper to make in the country. These extractions were so grievous, and were levied in so high-handed a manner,

that the farmers when they heard of the approach of the Court often deserted their houses and hid their supplies just as if the country were being invaded by an enemy.

Purveyance is said to have been for several centuries one of the chief obstacles to agricultural advancement in Great Britain, and the practice continued down to so late a period as the reign of James the First.

INCREASE OF POPULATION AND AGRICULTURAL IMPROVEMENT.

The increase in the population of Great Britain was an important factor in stimulating improvements in agriculture, for the more people there were to be fed, the greater the need of enlarging the area under cultivation and of adopting the best methods known in order to produce the largest crops.

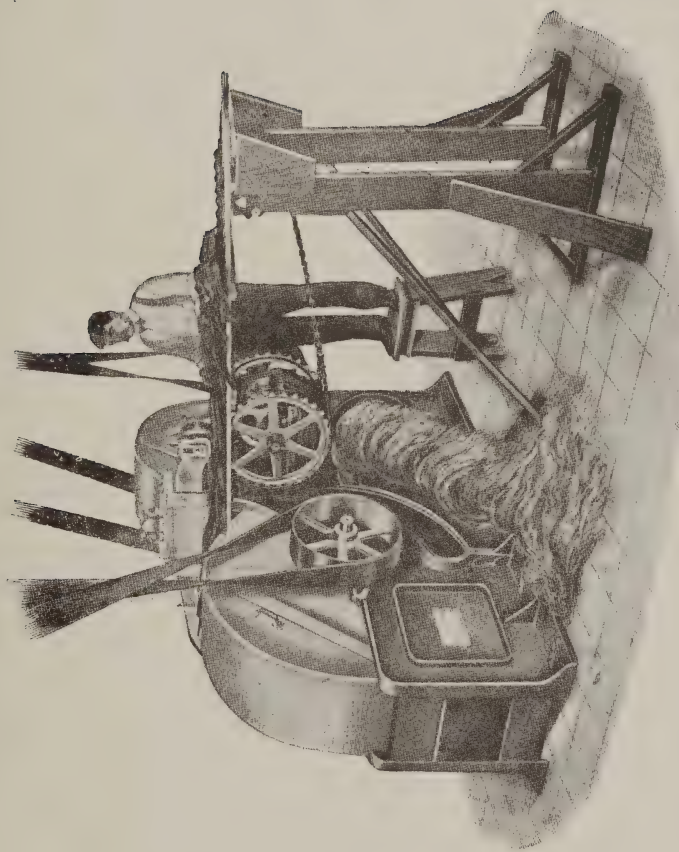
Prior to the taking of the first census in England and Scotland, which was in 1801, the method of computing the population was by the number of baptisms, which were carefully registered. The total number of baptisms was made up every ten years, and these were multiplied by 33, which was regarded as the average number of years in a human life. The number of deaths was also computed, and in so far as the baptisms exceeded the burials in number a corresponding increase in the population was shown.

Under this method of calculation the population of England and Scotland combined amounted in 1710 to 6,015,193. In 1740 it had risen to about 7 millions; in 1780 to 9½ millions, and in 1801, when the first regular census was taken, it was found to be 10,785,840.

From 1801 to 1811 the increase was still more rapid, the census of 1811 showing a population of over 12½ millions, which was more than double the number at which it was estimated in 1700. The population of Ireland is not included in these figures since there was no attempt to take a census of the people there until 1811, and then it was very unsuccessful.

On taking a general review of the production of grain in Great Britain and of the growth of the population there for the period of 119 years from 1697 to 1815 inclusive the amount stands thus:

In the first 70 years, from 1697 to 1767, the population increased one-third, growing from 6 millions to over 8 millions and during that period there were exported over and above the quantity imported 272 million bushels of grain. In the remaining 44 years, from 1767 to 1811, during which the population rose from 8 millions to over 12 millions, an increase more rapid than British agriculture could quite keep up with. the total excess of imports over exports of grain was about 132 million bushels in all, equal to about 2,800,000 bushels of grain annually. During the last five years of the period referred to, from 1811 to 1815, notwithstanding further increase in the population, and the waste and expense



FIBRE MACHINERY.—I.
The "Estrella."

of wars, Great Britain, favoured with good harvests, was able to raise a sufficient food supply to sustain her own people.

It is interesting to think of that fertile little island feeding all her own population and have a balance for export up to about 150 years ago. Notwithstanding the rapid increase in the number of food consumers during the next 49 years (up to 1815) she was able to occupy about the same independent position. How different things are now with a population of about 44 millions and an annual demand over and above all home production of over 200 million bushels of wheat.

(To be continued.)

Fibre Machinery.

NOTES FOR INTENDING PURCHASERS.

WE have lately received particulars regarding fibre machinery which we think will interest readers to have a few details. In this issue we publish illustrations of four different machines which are being turned out by the Prieto Machine Co., of New York. The first of these is the machine known as the "Estrella," which, with 25 horse-power, will treat 80,000 leaves in 10 hours. The machine is mounted on a foundation 6 feet high, so that the residue may drop into wheelbarrows set underneath. This machine also has the advantage of being easily cleaned. Our second illustration depicts the Irene No. 31, which is described as a single drum machine requiring 15 horse-power to run it with a capacity of 30,000 leaves a day. The leaves have to be run twice through this machine. The third illustration is that of the Irene No. 44 machine. This machine weighs a little over 5,000 lbs. and requires 10 horse-power to run it. The "Ideal" and "Irene" types are specially suited to the needs of all plants of the *Agave* family. Heavy scraping wheels are used for the purpose of dealing with extra thick or unevenly fed leaves. The fourth illustration shows a crusher constructed on the roller principle. This, of course, is only a small machine weighing 485 lbs. and requiring 3 horse-power to drive it; larger crushers are obtainable weighing 5,000 lbs. and more. A knuckle joint box baling press is depicted in the fourth illustration. The type shown is stated to be especially adapted for export work from its great strength and simplicity. The box for holding the material is opened and closed easily and quickly, and is on a truck so that it may be filled at any point to which a track can be laid.

THE FINNIGAN-ZABRISKIE CO.

Another type of fibre machinery is that manufactured by the Finnigan-Zabriskie Co., for which Mr. F. A. G. Pape, of Mombasa, is the African agent. One of these machines will deal with 40,000 to 50,000 leaves per day, producing roughly one ton of clean fibre. We are unable to give particulars of the principle of this type of machine, but we understand that it will extract unbroken fibre from leaves as much as 6 feet long, and that it turns out the fibre so clean that the latter does not need to be washed before drying. Mr. Pape has written to the Director of Experiment Stations stating that, should the extent and possibilities of our fibre industry warrant it, he would be prepared to come down to Natal and study the situation; as an alternative he suggests that Natal planters should appoint and send one of the most experienced amongst them up to Mombasa to see the fibre mills at work there.

THE ANDREWS MACHINE.

Another decorticating machine—one of the latest developments in this line—is Andrews' fibre decorticator, which has been invented by Mr. E. J. Andrews, 2, Templar Street, Myatt's Park, London, S.E. (Its manufacture has been placed in the hands of Messrs. Marshall, Sons and Co., Ltd., of Gainsborough.)

Describing this machine in its issue of 1st August, the *Implement and Machinery Review* states that the general principle of the invention is to substitute a gentle combing motion for the beating and scutching processes generally adopted, thus rendering it possible to deal with delicate fibres for which the latter treatment has been found to be too severe. Mr. Andrews states that although the machine has not as yet had time to get into extensive practical use, it has already successfully dealt with sanseviera, sisal, aloe, hemp, and several other Indian and African fibres at present little known on the market. It is understood, also, that the machine was originally designed for the purpose of dealing with the more delicate fibres of India and elsewhere, rather than those of Africa where the fibres grown are, generally speaking, hard and tough and able to stand the severe treatment of the earlier methods. It will, however, be recognised as being applicable to fibres of nearly all descriptions, since the gentler the treatment the raw material receives, so long as it is effective, the better for the resulting commercial product.

The machine is the outcome of the inventor's practical experience with fibre machinery in foreign countries. It consists of two drums, which revolve in opposite directions, each working one-half of the raw material as it is fed into the receiver. The drums are fitted with bars furnished with a number of pins which are graded from coarse to fine, and these gradually break up the leaves or stems and comb the fibre to

any desired degree of fineness. The pins free themselves of vegetable waste automatically at each revolution of the drums.

The leaves are first crushed and are then fed into the machine at right angles to their length, the continuous movement of two chain conveyors which traverse the drums bringing the leaves into the correct position for them to be treated by the combing pins. The first conveyor retains one half of the leaves or stems until the other half is completely combed; this cleaned half is then automatically grasped by the second conveyor and carried along the second drum, so that by the time the material is delivered at the end of the machine, every portion of it has been thoroughly treated.

It is claimed that the gentle combing motion removes all useless vegetable matter from the fibres without deteriorating the fibre by weakening it, and without making a large percentage of "shorts," which are often produced by machines constructed on the "scutching" principle. The result is a large output of clean, straight fibre of good quality and of correspondingly high value. It is further stated that many delicate fibres which have been hitherto unworkable by machinery and relatively unprofitable when treated chemically, have been successfully handled by this new machine, and have been made commercially valuable. The only preliminary treatment required is the crushing of the stems or the expulsion of most of the moisture from the leaves and this can be effected by an ordinary set of rollers or by any other flattening method. It is pointed out that most fibrous plants contain an acid or resinous substance which if retained during treatment, will discolour or rot the fibre, but in the Andrews machine these vegetable juices are removed by a water spray, which plays on the leaves during the combing process.

Under favourable conditions, the machine will treat from $2\frac{1}{2}$ to 5 tons of green manure per day of ten hours, the driving power requisite being from 7 to 9 h.-p. The machine is designed to deal with leaves of a maximum length of 4 ft. 6 in. Each drum is 3 ft. 3 in. long and 2 ft. 2 in. in diameter, and its normal speed is 40 revolutions per minute.

One who has tried it says that the most successful treatment that he has found for all wounds in horses feet is to clean out the wound and pour full of hot tallow or lard. This seems to give very little pain and one treatment cures.

The Establishing and Control of a Modern Creamery.

By LOUDON M. DOUGLAS, Edinburgh.

THE reason why Creameries have been called into existence in various countries is primarily, because of the great saving in the handling of milk and its products which can be effected by dealing with milk in large quantities. The individual farmer, whether he is in a small or a large way, is unnecessarily tied down to handling his milk for butter-making in the best way he can and with whatever appliances he is able to afford. The small farmer is not able to afford a hygienically constructed dairy, and for that matter very few large farmers have such a department on their farms. The objection, therefore, to the small farmer handling his milk so as to make butter from it lies in the fact that the churning has to take place for the most part in the dwelling-house, and that very often the milk is stored up until a sufficient quantity is obtained for churning, and by the time it is used it is generally teeming with bacteria. Should the hygienic conditions of the house not be very good, it is not unlikely that pathogenic germs will be present also.

Then again, the small maker of butter is heavily handicapped by not having mechanical appliances for pasteurising the milk, and, of course, this results in a great variety of objectionable flavours being imparted to the butter and certain inequalities which render it very objectionable. There is, as a matter of fact, no argument in favour of the private butter-maker, except he is a farmer who is sufficiently wealthy to put down sufficient plant for himself.

The creamery is a feature of modern agriculture, and more especially, in what may be described as "new" countries. Farmers therefore found that it is to their advantage to combine so as to handle their milk in central depots and by this system of co-operation produce uniform products. It is quite obvious that when a large number of farmers combine, their united interests enable them to procure the best technical skill in management, and also the best mechanical appliances which are available.

It does not matter very much which country you take as an example of these general principles. They have succeeded in Denmark, Sweden, Canada, the United States, and in many British Colonies. A notable example also is to be found in Ireland, where farmers have co-operated for all the various subsidiary industries connected with agriculture and have succeeded in a splendid way where individual effort would have been worse than useless.

The Irish farmer, however, has not yet learned the advantage of winter dairying, and whatever progress he makes in the summer months he loses the benefit of, to a large extent, during the winter. In Denmark this is not so, as it is so arranged that dairying there proceeds all the year round, and hence Danish butters maintain the first place in European markets. There is another feature of dairying which is only now being widely appreciated. It lies in the fact that where creameries are in existence, there is necessarily a large by-product of separated milk. There is also, in cheese factories, a large by-product of whey, and both of these by-products are, in themselves, of very little value. It has been found that, if fed to pigs, they are amongst the most valuable of fattening foods. Hence the Danish co-operative societies make it their business to carry on dairying and bacon-curing simultaneously. They take their fresh milk to the creameries, where it is separated, and the separated milk is handed back to the farmers, who return with it to their farms and feed it to their pigs. These pigs, when of sufficient size, are handed over to the co-operative bacon factories, so that the combination in dairying and in bacon curing is complete, as the by-products from the dairies, instead of being wasted, are converted into valuable food, and, in common with the butter, the bacon is also exported to England and other countries.

It is a comparatively easy matter to organise a farmer's creamery. All that is necessary is that someone should take the initiative and bring the farmers together. They should then take shares in the creamery to the extent of the average quantity of milk which they produce, and should undertake to supply all the milk they have for sale to their central creamery.

When these preliminaries are arranged, the next thing is to see about the construction of the factory; choosing a site for it that is supplied with plenty of water and where the drainage is also good. The size of the factory itself will depend on the quantity of milk it is proposed to handle, and this is a technical matter which should be referred to a competent authority, who would also be able to supply plans and specifications of work of construction to be carried out. It would then be necessary to appoint a manager, and preferably such an individual should be well up in the technical side of the business and have a knowledge of dairy chemistry. He is not wanted, however, solely as a technical expert, but must be equipped with business experience and commercial knowledge, so that when the products are available for sale he may be able to place them in the very best markets.

In so far as the details of a modern creamery are concerned, these will be best understood by describing such a place in detail, and this I hope to do in a future number, and also to give some photographic illustrations, showing the actual operations which are carried on.

Division of Agriculture and Forestry.

ADMINISTRATIVE REPORT: 1907-8.

THE period under review dates from the month of November, 1906, when the writer took office as Director of Experiment Stations, with control of agricultural experiments and chemistry. Responsibility was assumed in March, 1907, for the School of Agriculture; for revenue operations, and for all forestal and dairy work connected with the Natal Government Farms. Control of Crown Forests and the duties earlier performed by the Dairy Expert were associated with the office in November, and supervision of the Giant's Castle Game Reserve in December of the same year.

The Departmental *Journal* has afforded a medium for the communication of results secured from our experiments and investigations, obviating the necessity for publication of an exhaustive technical report. The present statement is consequently confined to a brief account of administration.

The period traversed has been characterised by repeated efforts to effect reorganisation in response to imperative demands for extensive reduction in expenditure, which were received on three successive occasions during the calendar year 1907. With the first development work, excepting farm drainage and afforestation, was necessarily terminated; with the second, entailing a large reduction in the European staff, certain detailed scientific investigations were replaced by commercial experiments, and an endeavour made to organise a business-like proposition calculated to become self-supporting within two or three years, already reflected by a trebling of the former season's revenue. A third demand for further economy could only be met by the abandonment of certain revenue-producing operations, a large reduction in the native staff at all stations, and a request for permission to apply current revenues to necessary expenditure.

It will be recognised that the withdrawal of financial support to the extent indicated by the following figures must have necessarily led to a temporary dislocation of our system, and a consequent postponement of the expected financial benefits. Officers, whose appointments were terminated during the past financial year, received in several cases salaries in lieu of notice and no immediate saving was indicated. The remaining members of the staff were moreover called upon to assume additional duties to which they were unaccustomed, and I would wish to express my appreciation of the loyal way in which they have identified themselves with an effort to meet the existing financial situation.

The estimated expenditure on services recently amalgamated in my division amounted for the financial year 1905-6 to a total of £25,985; in 1907-8 this figure was reduced to £18,296, while for the current financial year £12,631 is only asked for all expenditure connected with Government Farms, School of Agriculture, Crown Forests and Orchards, Dairy and Game Reserves, being a saving of more than 50 per cent. effected during a period of 24 months. Against an estimated expenditure of £12,631 may be placed revenues, calculated on a conservative basis, to amount to £5,300, leaving a total net charge upon general revenue of £7,331.

REDUCTION IN STAFF.

The establishment of our School of Agriculture and the utilisation of students under instruction for farm work have rendered possible, without serious loss of efficiency, a reduction of the European staff at all farm centres from an earlier total (1905-6) of thirty to the present number of thirteen. Appointments terminated include those of farm manager, clerk, stockman, forester, three orchardists and ten field assistants. Commensurate retrenchment has been compulsorily effected in the forest and dairy branches.

The limitation of Native labour has been even more drastic. At the time of my arrival one hundred and thirty-four Natives and Indians were employed at Cedara in field and development work, the former receiving an average wage of 35s. per mensem; to-day current farm pay sheets reflect thirty-six labourers receiving a maximum wage of 25s. In such circumstances, while a number of detailed experiments have been abandoned of necessity, the total acreage under cultivation has been largely extended and crop returns considerably enhanced.

In the forest branch, however, the greatest difficulty has been experienced in effecting economy of labour without exposing existing plantations to destruction by fire and overgrowth of weeds. The former danger must be annually obviated by the clearing and burning of some thirteen miles of fire breaks, entailing the continuous employment of at least forty Natives for a period of three months, in addition to labour required for our extensive nursery operations. It has therefore been thought well to limit further planting until such time as there may be a prospect of affording adequate conservation to established timber.

ASSETS.

The reproductive character of much past and present expenditure would appear from an examination of such of our permanent assets as will reach the profit-bearing stage before the end of the year 1910. It has consequently been suggested that a profit and loss account be instituted for the division to be supplemented by a small annual grant payable until the end of the financial year 1910-11, after which it is confidently expected that our various institutions will be self-supporting.

*Prospective Annual Revenue Derivable from Certain Permanent Assets,
Division of Agriculture and Forestry.*

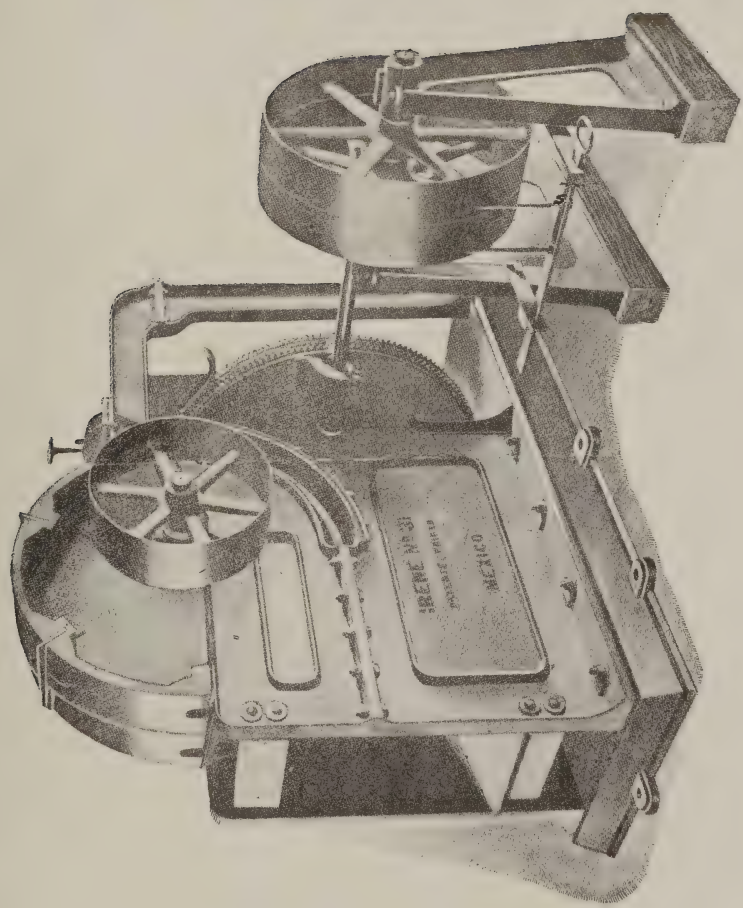
	£
(a) Crown Forests—Squatters' rents, felling licenses, sale of firewood, etc., on basis of 1906-7 returns with additional visible revenue	1,860
(b) Wattle Plantations—Planted 1903-4, at a mean annual revenue of £5 per acre on 423 acres	2,115
(c) Forest Nurseries—and sales of exotic timbers other than wattle bark—on basis of 1907-8 returns	1,000
(d) Rubber Concessions, Northern Zululand—Royalties and rents	500
(e) Orchards—Cedara, Weenen and Winkle Spruit, planted 1903-4 @ £10 per acre on 133 acres	1,330
(f) Sugar Cane—Winkle Spruit and Empangeni, @ 32 tons biennially @ 10s. per ton, based on 1907 returns (<i>Agricultural Journal</i> , November, 1907), 120 acres . .	960
(g) Dairy Herd—Stud fees, sale of stock, dairy produce from 50 milch cows, less supplied to School of Agriculture . . .	350
(h) School of Agriculture—Fees payable by 40 students @ £48 per annum	1,920
Total visible annual revenue, from 1910-11 . . .	£10,035

In addition to the above, timber plantations exceeding one thousand acres in extent have been established at Cedara, including, approximately, seven hundred acres of Cluster Pine, which should at a later date prove an invaluable source of income.

THE PAST SEASON.

In addition to difficulties connected with reorganisation on lines of the severest economy, the withdrawal of the entire farm staff for military service in December last, coincided with a regrettable outbreak of enteric fever among students, which necessitated the closing of our school for a period of three months. During the busiest season of the year I was consequently left without European assistance, and it is therefore with considerable satisfaction that I am able to report record crop returns. After the feeding of larger numbers than hitherto of all classes of stock, which now include at Cedara sheep, pigs and poultry, a considerable surplus of stover, hay, roots and grain remains for future use or sale, a result reflecting credit on field instructors and students, for in former years it has always been necessary to supplement farm grown supplies by purchase.

In other directions we have suffered seriously, though indirectly,



FIBRE MACHINERY.—II.
The Irene No. 31.

from the prevalence of East Coast Fever. Sawing operations in Crown Forests have been virtually at a standstill, pending solution of the problem of transport in the absence of cattle, with a consequent serious falling off in license revenues. Stud fees have been affected by the same cause, and it has been impossible to arrange delivery of two young bulls to would-be purchasers. A heavy frost during the early part of April, experienced throughout the midlands and up-country districts, somewhat seriously affected late crops at Cedara; with this exception, however, a singularly favourable season with an ample and well distributed rainfall has been enjoyed.

THE SCHOOL OF AGRICULTURE.

A provisional prospectus was issued at the beginning of 1906, announcing that a school—as the central feature of our system—would be opened for the reception of agricultural students on the 19th April of that year. On my arrival in October, thirteen applicants had entered into residence and a curriculum was organised, coming into effect from January, 1907. At the end of the year the limit of existing accommodation was reached with thirty names on our books, and arrangements were made for the reception of second-year students at our Coast Farm and Irrigation Station respectively. We are, however, again faced with the alternative of refusing further applications or providing additional accommodation, and, as a temporary expedient, houses vacated by officials whose appointments have been terminated, are being fitted up for the use of senior students. By this means it will be possible to entertain additional eight nominations, or a total, in all, of forty-six. At the moment thirty-eight persons are under instruction, and seventy-three have availed themselves of the education facilities offered since the opening of the school.

It is gratifying to learn that the training afforded has been the means of securing acceptable employment for all students desiring same on completion of their courses, and that we are drawing applicants from, and sending trained men to, all parts of South Africa. A possible objection to the latter feature of our work has been obviated by an increase in fees from £36 to £48 per annum.

At the instance of a number of professional farmers, whose time does not permit of prolonged residence at one or other of our stations, arrangements have been made for the establishment of a correspondence school, dealing with individual agricultural industries, to be supplemented by short vacation courses of practical instruction during the months of July and December.

It is anticipated that authority may be secured for an offer of annual scholarships to leading secondary schools of the Colony, and negotiations have been opened for the recognition of our institution as a collegiate centre by the Cape University.

AGRICULTURAL LABORATORY.

During the past year severe demands have been made upon the Analyst, and, although the imposition of a small fee for analytical work has modified an earlier tendency to overwhelm this branch, the number of samples received for report is still in excess of the possibilities of the staff, and furnishes clear proof of the value of the services rendered. Two hundred and fourteen determinations have been made, including the compilation of the Annual Fertiliser List, of which the following are the more important items:—Tanning materials, 53; fertilisers, 44; sugar cane, 42; soils, 37; sugar beet, 10; limes and limestones, 8; tobacco, 5; phosphate rocks, 5; cream, kaolin, sweet potatoes, rubber, fibres, etc., 10.

Numerous articles have also been contributed by the Analyst to the *Agricultural Journal* and he has delivered some thirty lectures and demonstrations on agricultural chemistry at the School of Agriculture.

CROWN FORESTS.

Attention has already been drawn to the far-reaching influence of East Coast Fever and no branch of our work has suffered more severely from this cause than the forest conservation service. The temporary cessation of felling operations seriously interferes with the maintenance of scientific rotations in section cutting, and the resulting loss of revenue is of more than ordinary moment at the present time. Exhaustion of stocks of native timbers is, however, already leading to a renewal of activity at several centres, and efforts are being made to overcome difficulties of transport by the introduction of mechanical traction. An extension of the Cape-Natal Railway to Riverside will tap the best of our southern forests and enable sawyers to market timber at far greater advantage than heretofore. The Qudeni Saw Mills Company are also reassuming work with increased capital, and in Alfred County licenses are again being issued for the Impetyne and Ingeli Forests.

A graphic illustration of the benefits derived from scientific conservation is obtainable from a comparison between those portions of our principle forests which were lumbered on destructive methods in the old days, and sections which have since been cut over in accordance with the principles of modern forestry. In the former cases natural regeneration has been powerless to efface the permanent damage inflicted by over-felling, and re-growth of timber has been checked by dense masses of undergrowth, with a consequent serious reduction in the value of the forests. On the other hand, where careful control has been exercised, re-growth of scheduled species holds promise of a permanent supply of valuable timbers as one of the most important of Colonial assets.

The demand for retrenchment in the forest staff is being met by the abandonment of low-bush areas and a concentration of attention on the more valuable forests, which are being demarcated with a view to afford-

ing the additional protection provided by Proclamation No. 58 of 1903. Wherever possible, advantage has also been taken of offers of honorary supervision and a considerable reduction thereby effected in salaries paid. The latter course has already been adopted in the cases of the Inkwelo, Majuba and Nottingham Forests.

Native unrest and the resulting poverty of forest squatters has accentuated the effects of cattle disease. At the instance of the Department of Native Affairs efforts to collect overdue rents were postponed, though it is satisfactory to note that this phase of the situation is drawing to a close, and outstanding debts have already been reduced in total. Further concessions of a permanent character have been made to Natives in the matter of the issuing of firewood licenses. A real grievance existed in the difficulty experienced in securing single licenses for one head-load from district foresters who may reside twenty miles from applicant's kraals, and moreover be frequently absent on patrol. An undesirable multiplication of convictions for forest offences has been obviated by the issue of five shilling annual licenses (Government Notice No. 266, 1908), with the immediate result of an increase in revenue from this source, to be explained by the fact that for every bundle purchased under the former system fifty were stolen. It has been found desirable to reduce the charge for single bundles from 6d. to 3d., which has similarly led to a satisfactory increase in receipts (Government Notice No. 386, 1908). A modification in the terms of forest squatter's license, including a slight reduction in the rent paid for additional ground for cultivation, apparently removes the only remaining ground for complaint on the part of Natives dealing with the Forest Department.

During January of the present year I inspected work done by Rubber Concessionaires in Amatongaland, and found that the greatest obstacle to the successful exploitation of this natural asset lies in the insufficient supply and unsatisfactory character of the native labour locally recruited. Extravagant wages are demanded for very inferior services, and in the issue the results have been so unsatisfactory that in no case have the terms of concession been fulfilled. Reorganisation of operations on the basis of imported labour is in consideration, and a larger report should prove of greater interest.

Useful work has been done in connection with game preservation during the past season at Giant's Castle, and the rapid multiplication of eland had led to an attempt to capture and domesticate a number of these buck on the lines successfully employed in Southern Rhodesia. At the moment of writing the Forester is employed in this undertaking and thirteen calves have already been secured.

A monthly report by the Chief Forest Officer published in the *Agricultural Journal* furnishes an interesting record of routine work in the Crown Forests.

AFFORESTATION.

Public demand on our forest nurseries for timber transplants continues to expand and revenues from this source show a correspondingly satisfactory figure. During the past season 63,550 trees have been distributed, of which a considerable percentage were of the larger sizes, for ornamental purposes, and receipts totalled £948 for the financial year. Projected municipal planting in the Northern Districts has led to a call for the services and advice of the Afforestation Officer, and it is understood that considerable plantations are to be organised at Ladysmith, Dundee and Newcastle, stock for which will be obtained in part at least from our nurseries.

Owing to the necessity for securing economy there has been but little extension work at Cedara to chronicle. All available native labour has been directed to plantation thinning and cleaning, and to the clearing and burning of fire lines. The former operation has provided an ample supply of firewood for all purposes, and purchases of coal have ceased. We have in addition secured several thousand eucalyptus poles for the construction of pole drains in the vleis. Some planting has, however, been taken in hand with a view to giving students instruction in plantation work. During the period under review the following acreages have been under timber:—

<i>Pinus longifolia</i>	5 acres.
<i>Eucalyptus amydalina</i> (Giant Gum)	7 acres.
<i>Eucalyptus tereticornis</i> (Forest Red Gum)	6 acres.
<i>Eucalyptus stuartiana</i> (Apple Scented Gum) . .	$\frac{1}{2}$ acre.

A shelter belt on the south side of the experimental area has also been put in, the top half being sown with *Acacia melanoxylon* (Blackwood) and the lower half with *Cupressus horizontalis* (Spreading Cypress). Much needed wind breaks have been planted in the Orchards, consisting in the eastern section of *Pinus pinaster* (Cluster Pine), *Callitris Australis* (Oyster Bay Pine), and *Casuarina tenuissima* (Beefwood), and in the western orchard of *Pinus longifolia* (Chir Pine), *Cupressus Lusitanica* (Cedar of Goa), and *Callitris Australis*. A further area of forty-five acres has been brought under the plow during the present winter for spring planting with Cedars, Pines and Cupresses. The completion of the work will bring the total area under exotic timbers at Cedara to approximately 1,400 acres.

The work at Empangeni, Zululand, has been similarly curtailed for want of funds. Plantations of twenty-six kinds of *Eucalyptus*, among other timbers, were established at this centre in 1905, of which the most promising species are *Eucalyptus diversicolor* (Karri), *E. pilularis* (Black Butt), *E. maculata* (Spotted Gum), *E. corynocalyx* (Sugar Gum), and *E. paniculata* (Tow Vale Gum). One species, viz., *E. obliqua* (Stringy

bark has died out. Of rubber-producing trees, *Manihot glaziovii* (Ceara), is doing best. Eight hundred Para trees (*Hevea brasiliensis*) have recently been planted. The cost of conservation at this station is being met by cropping available ground with maize, sugar cane, ground nuts, sweet potatoes and other revenue crops. The Forester has also been placed in charge of Crown forests in the district, income from which defrays a proportion of his salary. It is thus hoped that sleeper plantations may be brought to maturity without charge on general revenue.

In addition to supervisory duties, the Afforestation Officer has delivered a course of valuable lectures at the School of Agriculture on subjects falling within his province, supplemented by demonstrations and practical forest training, which have been much appreciated by students.

CENTRAL EXPERIMENT FARM.

The principal feature of the past season's work in the agricultural section at Cedara has been the reclamation of two vleis by means of a comprehensive system of drainage. The resulting crop of maize afforded ample evidence of the superiority of this ground over the hill side soils, to which earlier cultivation has been practically confined. Despite hard frosts in early April, which undoubtedly seriously reduced weight of grain harvested, the yield secured to the first season's planting in the vlei averaged thirteen muids to the acre. The only fertilisers employed were 200 lbs. of one or other of the phosphatic manures, superphosphate, basic slag or bone meal, which were dressed to secure the comparative results published elsewhere.

The cost of draining has been reduced to a minimum by the use of the mole plough wherever stiff clays were encountered, and of poles from our plantations in lighter soils. A few lines of tiles were also laid to afford instruction to students in this work. Levelling and contouring afforded interesting instruction to the field surveying class. In the eastern vlei paddy plots have been levelled and embanked, and a very promising crop of rice was destroyed when the grain was in milk by the abnormal April frosts mentioned above. This experiment will be repeated during the coming season.

A reduction of the field staff from twelve to two men has resulted in a heavy demand upon the efforts of the remaining officers to which a loyal response has been made. This branch of our work has as a primary duty the provision of supplies to all other departments, including the School of Agriculture, dairy herd, forest and orchard sections, and Crown forest stations.

In addition to rations for native labourers, natural increase among all classes of live stock, now including cattle, horses, mules or donkeys, sheep, pigs and poultry, results in an ever-increasing consumption of stock food, which we are endeavouring to meet by yearly bringing an

additional acreage under cultivation. In the past supplies have fallen short of the demand, but the present season finds the farm with a surplus of produce which should enhance last year's income of £215 from direct sales. It may be pointed out, however, that it is preferably through our live stock branches that revenues will be earned, a view justified by the numerous enquiries received for selected breeding stock. In this connection mention may be made of the fact that all Persian rams bred at Cedara have been disposed of at prices ranging from £3 to £5 a head, and that sales of poultry have only been limited by the birds available for distribution. Pig-farming on the paddocking system has been undertaken as a demonstration and with a view to supporting the bacon factory now under organisation at Nel's Rust. As the number of residents at Cedara now permits of profitable butchering, stock are being raised and fattened with a view to the provision of our own beef, mutton, pork, and poultry in addition to dairy and farm produce. This feature, while further reducing the marketable surplus of grain, is capable of effecting a more than proportionate reduction in working expenses. The following is a brief statement of staple crops harvested during the past season to date:—

GRAIN.		FEEDING CROPS.		SOILING CROPS FED ON GROUND.	
	lbs.		tons.		acres.
Maize ...	170,000	Maize Silage ...	160	Lupins ...	10
Buckwheat	8,600	Millet „ ...	50	Kale ...	6
Munga Millet	4,400	Grass Hay ...	110	Vetch and Rye...	6
Japanese „	3,400	Maize Stover ...	80	Barley ...	8
Ground Nuts	1,000	Barley (green) ...	15	Oats ...	2
Bears ...	880	Mangolds ...	20	Artichokes ...	2
Lupins ...	700	Swedes ...	35	Ground Nuts ...	2
Potatoes ...	18,000	Turnips ...	36	Cow Grass Clover	2

The small number of haired Persian sheep imported to Cedara early in 1907 thrive remarkably well, and no disease has been experienced, though, as a measure of precaution, all animals are annually inoculated against blue-tongue. After the sale of all rams we have now a mob of some hundred and twenty sheep.

The introduction of woolled Persians has also been effected and cross-breeding experiments with Merino, Shropshire and Long-woolled Devon types have been instituted with a view to securing a relatively hardy woolled sheep with constitutional resistance to heartwater for districts in the Colony which have hitherto proved unsuitable for the European breeds. An exhaustive article on the subject appeared in the *Agricultural Journal* for March, 1908.

In addition to his duties connected with field instruction, stock

management and control of stores, the Chief Field Instructor is delivering a useful course of lectures on apiculture at the School of Agriculture, and the Engineer has supplemented routine instruction with a series of valuable demonstrations on machine construction and drawing.

DAIRY HERD AND POULTRY FARM.

The most encouraging feature perhaps of the past year's work with the dairy herd has been the excellent milking qualities shown by Cedara-bred heifers and their relative superiority over locally purchased dams. Although only now with their first calves, the majority of these promise to be very profitable milch cattle amply justifying heavy winter feeding. The comparative results secured from a number of selected rations have been published elsewhere, and from many accounts proved of considerable value to dairy farmers. The adoption of the guidance thus secured in our own case has led to an unexampled milk-flow during the past three months, when, in addition to hand feeding twenty-four calves, and supplying school and staff with milk, we have been enabled to make as much as seventy pounds of butter a week disposing of the surplus beyond our own requirements on the Johannesburg market. With the approach of warmer weather cheese-making on a larger scale than heretofore will be taken up for the purpose of instructing students and several outside applicants in this branch of dairy work.

We were fortunately able to dispose of all young bulls available for distribution with the exception of two, prior to the imposition of restrictions on movement, together with a number of barren and unprofitable cows, the latter of which had been weeded out on the basis of milk and butter fat records for the past two years.

A poultry farm was organised during the winter of 1907 with small breeding pens of five varieties of fowls. Unqualified success has attended the first season's work, and, after stocking the farm with some two hundred birds we have been able to cover the original outlay by the sale of breeding stock and eggs for incubation. Success at the Conference Poultry Show held in Maritzburg, which comprised two cups and a gold medal, the former including that for the best bird on the Show, have materially assisted towards the establishment of a reputation for the farm.

The combined revenue from dairy herd and poultry for the past financial year has totalled £319, exclusive of the value of large supplies to the school.

ORCHARDS.

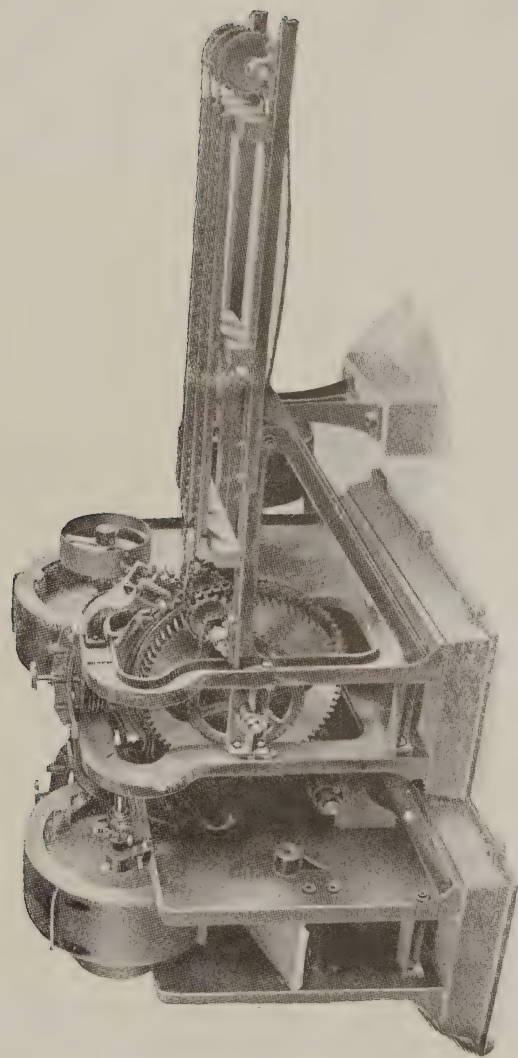
The reduction of the staff from four men to a single officer has thrown very heavy duties on the present Orchardist, which include responsibility for extensive orchards at Cedara, Weenen and Winkle Spruit, in addition to which he has been required to assist in the work of tuition at the school with lectures and field demonstrations, including practical instruction in

grafting, budding, pruning and planting. During the past year small crops of fruit were obtained both at Cedara and Weenen from many of the sections for the first time, and the forthcoming season should witness a large increase in the output, especially of Japanese plums, peaches and apricots, in types which have already secured a very favourable market in Johannesburg. Sales from Cedara during the past financial year amounted already to £57, and fruit was provided to the school for the purpose of jam-making to the value of £13. With greatly reduced expenditure and increasing revenue this branch should reach a self-supporting financial position within the next twelve months. The Orchardist's annual report is to be found in the May issue of the *Agricultural Journal* for 1908.

WINKLE SPRUIT EXPERIMENT FARM.

Our Coast Farm has proved an invaluable medium of instruction to second year students in the cultivation of staple Coast crops, and has been the direct means of securing employment for several of the latter on completion of their course. As at Cedara, development work has been allowed to engross attention with the object of placing the institution on a self-supporting basis. The European staff has been reduced to a single manager, and two former assistants have been replaced by students working under instruction. Additional four hundred acres have been added to the farm and fenced for the purpose of live stock experiments on the basis of *paspalum* pasturage. Some fifty acres have already been planted with this grass. The first stage of an exhaustive period of experiments with sugar cane was brought to completion during 1907. These included the comparative trial of varieties, times and distance of planting, relative values of fertilisers and the chemical character of the juice as affected by methods of cultivation. A duplicate set of plots organised on the same lines were simultaneously harvested at the Stanger Experiment Station, and a valuable comparison instituted between results obtained from light sandy hill soils and from vlei ground. Continued over a series of years, these experiments should supply a complete answer to the many problems of cane cultivation on the Natal Coast. Several importations of new and approved varieties have been effected for the purpose of distribution after their values have been established. Considerable supplies of seed cane have been already forwarded to new settled areas in Zululand, and a demand has arisen in India for our Uba type. Full reports on the above experiments were published in the July and October issues of the *Agricultural Journal* for 1907. Other valuable importations have included cotton and leaf fibre plants, new types of pineapple for exporting purposes, mangoes, a disease-resistant coffee, dwarf bananas, etc.

In reply to representations from Indian planters, an effort is being made to build up an export in seed of the local indigo (*Indigofera arrecta*) for which a great demand exists. A somewhat unexpected



FIBRE MACHINERY.—III.
The Irene No. 44.

feature at this station has been the remarkable growth made by the Black Wattle plantation, far more rapid development being shown than in the midland districts. The importance of this fact has been accentuated by the determination of a larger tannin percentage in coast bark than in that derived from inland districts, being a reversal of earlier ideas on this subject. Visitors to the number of more than a hundred have been entertained at the Farm during the past six months, and a heavy correspondence dealt with on subjects there receiving investigation. Sales of produce have amounted to £218 during the past financial year, being an immediate return to recently organised revenue crops, which will be considerably increased by the harvesting of a large area of cane.

WEENEN IRRIGATION STATION.

This station has similarly afforded an excellent training to students in the work of scientific agricultural irrigation, in the cultivation of winter cereals with particular reference to wheat, and in the curing and manufacture of tobacco. An endeavour has been made at this centre to demonstrate to settlers a profitable selection of crops for irrigation blocks, and the methods to be adopted for securing the highest net return per acre. Of the former, lucerne, peas, beans, tobacco, wheat, oats, barley and fruit have received particular attention, and numerous articles have appeared in the *Agricultural Journal* descriptive of the results obtained. A tobacco barn adapted to the method of fire-curing has also been erected for the benefit of local planters, and a scheme organised for co-operative production and manufacture. Inability to secure loan funds for the necessary machinery, voted by the Legislative Assembly, has, however, proved an almost insuperable obstacle to progress in this direction both at Weenen and Vryheid. As sources of revenue we now have at this station twenty-eight acres of fruit trees coming into full bearing, annual summer crops of tobacco, lucerne, beans, maize, etc., and winter crops of tobacco, lucerne, beans, maize, etc., and winter crops of wheat, forage and peas. Mention may be made of the fact that every pound of wheat and peas secured from our selected varieties was sold to farmers in Natal and the Orange River Colony for seed, and an additional order for Standard Fife wheat cabled to England to meet further demands. Some eight tons of tobacco leaf are awaiting the possibility of securing the cutting and conditioning plant. Reduction in expenditure on the other hand, has been no less drastic than elsewhere a single curator, assisted by students, now working with a very small staff of Indians, and gross outlay for the current year is estimated not to exceed £378.

EXPERIMENTAL AND ADVISORY WORK.

The effect of radical retrenchment in all branches of our work lost nothing in force from the fact that adjustment to a new financial situation has had to be made, in many cases at a moment's notice and in the

middle of a working season. Reorganisation in such circumstances necessarily spells some amount of disorganisation, and, despite all efforts to the contrary, there has been a break in the continuity of some of our experiments. In general, earlier findings have been taken as the basis for commercial trials on a larger scale which have been necessarily limited in number. It has been thought better to confine attention to the solution of a few leading problems of local agriculture than to dissipate our limited resources over a large number of investigations, especially in view of the fact that my predecessor's comprehensive report embodying the results of several thousand field trials still lies unpublished. In this connection it may be mentioned that authority is to be sought for the private publication of memoirs, including a digest and record of experimental work at all stations from the time of institution to the present date. In reply to certain irresponsible statements to the effect that scientific experiments have been abandoned, attention is drawn to forty-seven articles and reports from the writer's pen which have appeared in the *Agricultural Journal* during the past eighteen months descriptive of recent investigations. The subject matter of these enquiries has included the cultivation of maize, wheat, rice, barley, oats, rye, millets, lucerne, peas, beans and other legumes, sugar-cane, sugar-beet, potatoes, roots, tea, coffee, tobacco, cotton and other fibre crops, indigo, pineapples and other tropical fruits. Attention has also been directed to the problems of our live stocks industries, and valuable comparative results have been published on the subjects of the winter feeding of dairy cows, paddock feeding of pigs, the relative merits of types of Persian sheep and modern methods of poultry-farming. It must be recognised, however, that scientific investigation is necessarily the most expensive and least remunerative feature of our work, and, unless adequate financial support be afforded, the responsibility for any failure to comply with demands for further data lies elsewhere than with our management.

Educational factors have been found not only in the School of Agriculture and in the *Agricultural Journal*, but also in an extensive correspondence on technical subjects which, since the amalgamation of farm, forest and dairy offices, frequently numbers forty to fifty communications per diem. In addition to five lectures delivered weekly at the School of Agriculture in accordance with the terms of our curriculum, the writer has also endeavoured to find in the supervision of outlying stations and forests an opportunity of meeting farmers for the purpose of discussing means of forwarding our different agricultural industries. Fourteen addresses have been given during the past year at as many centres on the subject of tobacco cultivation and manufacture, and the adoption of certain suggestions has already resulted in the production of superior and more marketable leaf. At every point, however, an almost insuperable obstacle is for the moment met in the impossibility of secur-

ing funds for development work. That this condition is more than a passing phase we are not prepared to admit, and our present organisation bears a very definite relationship to existing financial conditions.

E. R. SAWER,
Director.

Central Experiment Farm, Cedara,
August 20th, 1908.

TO TELL THE AGE OF HORSES.

Two middle "nippers" you behold
Before the colt is two weeks old ;
Before eight weeks two more will come ;
Eight months the "corners" cut the gum.

The outside grooves will disappear
From middle two in just one year ;
In two years from the second pair ;
In three the corners, too, are bare.

At two the middle "nippers" drop,
At three the second pair can't stop ;
When four years old the third pair goes,
At five a full new set he shows.

The deep black spots will pass from view
At six years from the middle two ;
The second pair at seven years ;
At eight the spot each corner clears.

From middle "nippers" upper jaw,
At nine the black spots will withdraw ;
The second pair at ten are white,
Eleven finds the "corners" light,

As times goes on, as horsemen know
The oval teeth three-sided grow ;
They longer get, project before,
Till twenty, when we know no more.

Co-operation in the Poultry Industry.

SUGGESTED ORGANISATION IN NATAL.

WE have been favoured by the Editor of the *South African Poultry Journal*, Durban, with a copy of an interesting paper on co-operation from the point of view of the poultry-keeper by Mr. Tinson, which contains some useful suggestions for the organisation of the poultry industry in Natal upon co-operative lines. The first portion of the paper is taken up with particulars of the methods adopted by the Irish Agricultural Organisation Society and National Poultry Organisation Society, as well as of the methods involved in Denmark and Sweden. The information which he has gathered Mr. Tinson presents in a very succinct form, and then proceeds to outline a scheme which might be suitable for this country. Every poultry society at present existing in this country, Mr. Tinson says, covers a very wide area; its headquarters is a town on a line of railway, in many cases on a main line. "Let this be considered then as the base for local operations. In England it is generally admitted that within the radius of manufacturing and industrial areas trading arrangements are on the whole satisfactory, consequently the National Poultry Organisation's attention has been turned mainly in the direction of organising and developing the purely rural districts where producers are more scattered. But in this country neither the manufacturing and industrial nor the rural districts are in any way developed or organised, nor are the arrangements generally satisfactory. Our poultry societies are situated in these manufacturing and industrial areas, so their attention to their own house, so to speak, is not only natural but presents the greatest immediate chance of success. Holders of plots in the neighbourhood should be encouraged to make poultry keeping one of the primary and leading branches of their operations. This will possess the advantage of strengthening the membership of the club, and holding and increasing the interest of the older members during the period when that interest is prone to wane. To this end recourse may be had to the distribution of leaflets, the promotion of lectures, or personal canvass of the district or any other ways which may occur to the local members."

Mr. Tinson proceeds: "Having aroused the attention of the district to the subject of poultry keeping and induced as many as possible to embark therein, a move must be made in the direction of establishing a system of collection.

"In Denmark the work of collection of eggs is put up annually for competition. The Irish Agricultural Organisation Society pays its carters a fixed weekly wage plus a commission on the number of eggs collected.

In the National Poultry Organisation Society the larger societies employ a carter to collect the eggs, purchasing the necessary horses and carts out of their own funds; whilst the smaller societies arrange that their members shall deliver the eggs to the depot. Which of these plans is adopted will, of course, depend on the local society itself. The actual marketing of the produce should as far as possible be in the district in which the eggs are produced. This will have the advantage that the eggs are in the consumers' hands in a perfectly fresh condition, with its consequent increase in price; and the cost of railage being absent, the expenditure will not be so great, and the society will reach the profit-bearing stage all the sooner.

"The question of the collecting depot will need some careful thought and enquiry; not only must it be centrally situated in relation to the collecting area and the position of the retailers but the expenses in connection therewith, wages of manager and assistants, rent, lighting, replacing worn plant, etc., must in the nature of things in this country be by no means small, and consequently require close attention.

"In connection with a depot, the manager of which devotes the whole of his time to the work, I should imagine that the total cost cannot be much less than £500 per annum. If you consider the wages of a manager who probably also does the clerical work, the cost of collection, the wages of those employed in grading, testing and packing, rent and lighting, replacement of worn plant, etc., I think that you will agree with me that the estimated cost is a very moderate one. To meet this expenditure it will be found necessary to have double the members stipulated for by the Irish Agricultural Organisation, which would be 240 members each keeping 30 good laying hens and supplying all their produce to the society, or the equivalent of that number.

"This is not throwing cold water over the scheme, but rather facing facts, and if in practice the theory is disproved, no one will be more pleased than the writer. Some portion of this expenditure may, and probably will, be recovered by the society purchasing poultry food wholesale, and retailing it to the members, or by the society engaging in the sale of stock birds, and eggs for setting; this, however, is not our present subject; given the 240 members or their equivalent, there is nothing to prevent the scheme going through and not only paying its way, but paying a dividend.

"In the smaller societies the expenditure will not be nearly so great; the manager will not be required to devote the whole of his time to the work of the society, and wages of assistants, and the rent and replacements, etc., charges will not be so great, so there is an equal probability of their success.

"Mention has already been made that the societies should endeavour to market the eggs locally. If the supply should exceed the demand, or

the demand for eggs exceed the supply, reference could be made to the Central Organisation. This body could establish a regular system of reports to and from itself, based on the demands of each district and any other information acquired, and could thus advise societies of the best markets to which eggs could be forwarded; in short, the central body should adopt measures for bringing the producer and retailer into closer touch, and so far as possible fill in South Africa the position so well filled in England by the National Poultry Organisation Society.

"I have not sufficient data to hand to go very deeply into the question of cost of railage; but it is advisable that the subject should be mentioned. On the Cape Government Railways from 51 to 120 lbs. of eggs are carried from 251 to 500 miles by passenger train for 2s. 6d., or, if empties are to be returned, for 3s. 120 lbs. of eggs, on a basis of 8 eggs to the pound, would equal 8 long cwts. Allowance must, however, be made for the weight of the receptacle and packing materials.

"I do not intend to lay stress upon the matter of cost of railage, because it has been usual to send the produce 'carriage forward,' and because retailers have assured me that they do not complain so much of the cost of the carriage of eggs as they do of the insufficiency and irregularity in supply; if, therefore, these two troubles can be remedied success may be considered to be assured. Societies should lay themselves out to remove these troubles; there is no reason why they cannot be overcome, the country is large, and the moulting and off laying season by no means uniform throughout, and instructions can be given on times for hatching and how to obtain winter eggs, and if, in addition, arrangements are properly made by the central body the surplus of one district may be forwarded to another whose supplies may not be coming in so regularly, and sufficiency and regularity may be attained.

CAPITAL.

"Capital should be provided by members at a certain amount per share, and bear a fixed low dividend. The amount of capital required will naturally vary with each district; but it should be as low as possible consistent with efficiency, and be fixed by the outlay necessary to the purchase of plant and arranging fixtures, etc. I have already quoted from the experience of the National Poultry Organisation Society what they consider to be necessary in the way of fixtures, plant, etc.

"If the practice is adopted of paying for eggs immediately upon their being handed to the society's collector or depot, provision will need to be made to meet that outlay, either by increasing the capital to an amount large enough to meet the necessary payments, or by short term loans. If, however, the course is adopted of paying members for the eggs monthly, arrangements may be made for the members' accounts to be met after receipt of payments for produce from the retailers, in which case neither increase in capital nor short term loans may be necessary.

"In connection with the payment of members for produce supplied, it may be found necessary to adopt the practice which experience has taught all other societies, viz., the necessity for making deductions for all eggs supplied that are bad, stale, or do not reach a defined standard of freshness, and for those that do not reach a certain size and weight if the eggs are bought from members by numbers and not by weight. The practice of fining members for "smalls" is made with a view to fixing as far as possible a regular size of egg: 7, $7\frac{1}{2}$ or 8 eggs to the pound seems to be the desired standard in most places.

"To summarise all one's conclusions under the heading of co-operation for the purpose of collecting and marketing the eggs:—

"The central body should exist as advisory, filling the necessary requirements in the way of developing, instructing, organising and giving strict attention to the markets and the bringing of producer and retailer into closer touch.

"That as an initiatory step the local societies should develop the urban areas so that each district should as far as possible provide for its own requirements, any surplus to be forwarded to the best and nearest market as advised by the central body.

"The capital required by both the central body and the local societies should not reach too great an amount, being based as low as possible consistent with the purchase of the necessary plant, and the other expenses to be covered.

"In principle the co-operative scheme is simplicity itself; the members supplying the produce to the local societies who market to the best advantage, the central body directing as to the best markets outside the district in which the eggs are produced, as the necessity arises for the eggs to be sent away. But, like all simple schemes, numerous details have to be filled in; some of these have been pointed out, and the experience of other societies is valuable as affording light on many points of the subject. It must, however, not be forgotten that no two co-operative societies are exactly alike, or coincide in details, and it is upon these details that one cannot presume to lay down any exact rule and line. Experience has taught all existing co-operative societies the best methods for them to adopt, and experience alone must teach the various districts in South Africa the best methods of detail for them to adopt. The only hard and fast rule which one can lay down is the main theme; get your eggs to market and get them there freshly, cleanly and quickly. The fresher they are the better the price. Let every measure tend to the freshness and cleanliness of the article when placed on the market, to increase the speed with which the article reaches the market and those measures cannot be far wrong.

"Increase the quantity. Have only the best quality and market the eggs, quickly, very quickly, and you kill the imported article."

Railway Rates on S.A. Produce.

INTERVIEW WITH GENERAL MANAGER OF RAILWAYS.

THE following are the notes of an interview between a deputation from the Natal Agricultural Union and the Minister of Railways and Harbours and the General Manager of Railways, referred to in our last issue, for which we are indebted to the Secretary of the Union.

The deputation consisted of Mr. E. W. Evans (president of the Union), Col. Leuchars (representative, Mr. C. H. Mitchell), Rev. J. Scott, and Mr. Jas. King.

The deputation first met the Minister and General Manager of Railways together. At this meeting the Minister explained that it was not the intention of the Government to admit of any reductions of the railway rates, but it was their purpose to adjust them so that the revenue would be sufficient to meet the expenditure.

Mr. Evans pointed out that the intention of the sub-committee was to obtain information on certain discrepancies on railway rates in order that they might be in a position to place before the Union explanations of such discrepancies.

The power also included an enquiry into the mealie rates, which, however, had been dealt with at the former interview.

The Minister stated that the principal item in the proposed revised tariff was the increase of certain classes, including the South African produce class, by 10 per cent. and the shifting of certain articles now in the South African produce class to other and higher classes.

It was decided to go into the detail of the proposed changes with the General Manager, and the meeting was fixed for his office.

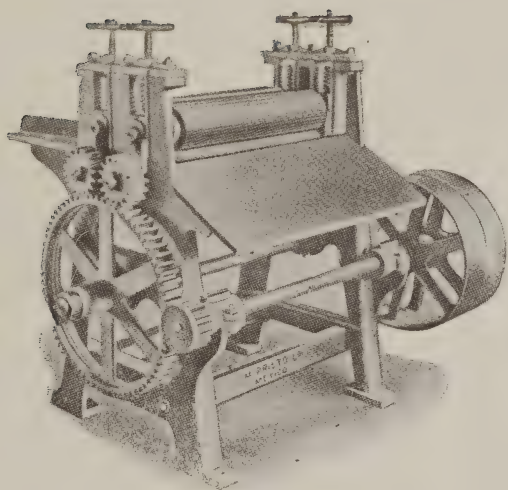
At the meeting with the General Manager a long discussion took place as to whether the sub-committee were entitled to discuss the proposed changes in view of the danger that they might be held to give consent to such changes and thus commit the Union to a position it might not be willing to confirm.

It was agreed, however that the best method of arriving at the information required by the sub-committee was to go into the proposed changes in detail and to express their views without committing the Union.

Col. Leuchars, during the course of the interview, expressed his opinion that there ought to be no increase in the South African produce rates as he believed 1½d. per mile was a paying rate.

SUGAR AND SUGAR CANE RATES.

The first point raised was with regard to the rates on sugar and sugar



FIBRE MACHINERY.—IV.
Crusher.—Gross Weight, 485 lbs
Horse-power necessary, 3 h.p.

cane. A memo by Col. Friend Addison was put in in which that gentleman suggested that a zone rate for the carriage of sugar might be 23 miles, 6s.; 50 miles, 10s.; 75 miles, 12s. 6d.; and 100 miles, 15s. Col. Addison maintained that the rates on cane were too high, and suggested a rate of $\frac{3}{4}$ d. per mile per ton irrespective of distance or the actual weight on the truck. He pointed out that at present the average amount of cane that could be loaded in an eight-wheeler was 20 tons, and the sender paid for about six tons of cane more than was actually on the truck. For transport to the mill, Col. Addison said that he found it cheaper to lay tram lines and do his hauling by mules rather than send by rail.

The General Manager gave figures to show that the revenue from cane was out of all proportion to the services rendered. With regard to sugar, he said the railway could not charge a much higher rate for short distances; as a result of this course would be the conveyance of sugar into Durban in carts. As to the zone rate, if that were adopted there would have to be a levelling up instead of a levelling down, as they could not undertake anything that meant a loss of revenue.

WATTLE WOOD.

A considerable discussion occurred on the rate on wattle wood and on the advisability of the present system of tapering rates (this term was employed after a discussion and an agreement that wattle wood was not carried on the zone rate). The General Manager pointed out that the system of tapering rates had the effect for the railway of giving a long distance trade which they would have to do without if the tapering system was not employed.

MILK TRAFFIC.

The General Manager said the proposal was to increase the rates on milk and butter traffic by $\frac{1}{4}$ d. per mile up to a distance of 100 miles. A considerable discussion ensued on this proposal, but the General Manager did not give any indication that the proposal would be modified.

LIVE STOCK TRAFFIC.

Mr. Evans, on this subject arising, drew attention to the cheapness of this traffic, and considered that where single animals were concerned the rates might be higher. After a long discussion, the General Manager suggested that as far as single animals were concerned it might be arranged that a train would leave certain stations on certain days with a special rate for animals travelling by that train. The committee, while agreeing to this suggestion, expressed their opinion with regard to this proposal to increase the live stock rates, that the rates for full truck loads should be as low as possible on account of the present position of stockholders caused by East Coast Fever.

PARCEL RATES.

The General Manager explained that certain goods that were now

carried at half parcels rates would in future be charged the full parcel rates.

SOUTH AFRICAN PRODUCE RATES.

The principal discussion arose in dealing with the details of these rates. The General Manager explained that the intention was to remove from the S.A.P. class to other and higher classes such goods as were already sufficiently protected by Customs. The alterations proposed were read, and in a few representative cases a discussion ensued.

CHARCOAL.

On the proposal to remove this to a higher class, it was pointed out that there was no industry in this material at present, but there was a prospect, in view of the establishment of certain manufacturies in and near Durban that a trade would be established and the railway rate would be a matter of importance in the industry.

CANDLES.

The General Manager stated that if the rates on the South African product were increased the rate on the imported article would also be increased.

JAMS, PRESERVES, VINEGAR, PICKLES, CHUTNEY, ETC.

As these various subjects came up a considerable discussion ensued. It was pointed out that these industries had been seriously crippled by the subsidy given by the O.R.C. Government to similar industries in that country, and to raise the railway rates at the present moment would be to strike a fatal blow at them. The committee strongly urged that there should be no increase on the rates of these articles. The General Manager suggested that in the case of industries that used fruit as a raw material the balance might be preserved by giving special rates for the raw products.

During the discussion it was pointed out that confusion was bound to arise if certain articles of South African produce were moved to higher classes, still leaving a South African produce rate for other articles. The General Manager admitted that a difficulty might arise, and suggested that there might be two S.A.P. classes, a lower and a higher, which would allow for the alterations proposed to be made. The committee agreed that this would meet the difficulty.

In dealing with the S.A.P. rates, the General Manager notified that Classes 1, 2 and 3, viz., normal, intermediate and intermediate B, would be increased by 10 per cent. The imported products rate would be raised to the rough goods rate.

The committee strongly urged that no increase should take place on the carriage of fertilisers, and the General Manager was understood to say that the views of the committee in this respect would be met.

The sub-committee thanked the General Manager for his courtesy and assistance, and the interview closed.



Locust Forecast—1908-9.

By ALBERT KELLY.

A comparison of the data collected during what may be described as the "Season of the Fliers" (May to September) of 1907 with the same period in 1908 gives one every reason to believe that the ensuing summer will not be a bad locust season, and that hoppers will not be at all abundant. It is, perhaps, as well that such is the case, because the supply granted for the destruction of locusts in this year's Estimates is £1,000.

On referring to the records of last season, I find that there were 108 reports of swarms in the Colony during the period between the 1st of May and the 15th of June. Advices of many of these swarms were, however, duplicated. Mr. Fuller, in commenting on the position at that time, wrote:—"One of the most gratifying features of these reports is to be found in the almost complete absence of fliers in those districts in which the destruction of hoppers was efficiently carried out by the locust officers during the past season."

The corresponding period this year only shows six reports of swarms, and two of these evidently refer to one and the same swarm.

Thus we find that the earliest indications of the advent of locusts last year were very strong as compared with those of this year, and there can be no doubt that the present position equally reflects the efficient destruction of the pest over large areas last season, and it may also be taken as some index of the value of the destruction of hoppers undertaken for the first time in Swaziland last summer.

In June of 1907 locusts were circling about the Maringo and Murchison Flats in Alfred County. Alexandra County was slightly infested, as was also Durban County. In the Upper Umkomanzi Division

locusts were prevalent, Mid-Illovo, Beaumont, and Richmond reporting settled or circling swarms. Maritzburg was also visited in that month, the swarm remaining in the environments of the City for six days. Reports were also received from Krantzkop, Victoria County (Mapumulo, Kearsney, Stanger, and inland from Tongaat). Zululand advices showed numbers of locusts in the Entonjaneni, Nkandhla, Mtunzini, Umfolozi, Hlabisa, and Eshowe Divisions were also invaded by the pest.

In June of this year, fliers were reported from Vryheid, Eshowe, Hlabisa, Mtunzini, and Empangeni, but reports from Ingwavuma, Babanango, Krantzkop, Greytown, Ematimatolo, New Hanover, Noodsberg, Umhlali, Tongaat, Verulam, Mount Edgecombe, Avoca, Mehlomyana, Murchison Flats and Umtamvuna showed an entire freedom from locusts.

For these months again the comparison shows a most gratifying diminution in the number of swarms this year.

The position of locusts in July, 1907, was somewhat similar to that obtaining in the preceding month of that year. Except for a few stragglers in the veld, there were no locusts in the Northern Territories, and Ingwavuma and Ubombo were both reported to be free. As these two latter districts are looked upon as a wintering ground of the locusts, the position as regards thereto was most satisfactory. In July of this year the only swarm reported to this office was one notified from Eshowe as flying southwards on the 8th. Numerous "Nil" statements were, however, received.

Early in August of last year the swarms which had been hybernating in the Colony began to evince a restless disposition, making minor migrations. The most important of these was the south-easterly flight from Ngotshe to Zululand. That this restlessness was not confined to Natal alone was apparent from several reports which reached us from districts which had been free for months, and which clearly indicated that Natal was being invaded from Swaziland.

The returns for last month (August, 1908), do not inspire any alarm. Swarms are reported from Paulpietersburg, Kearsney, Lower Tugela, Mtunzini, Mapumulo, and Empangeni. There is no general trend of flight, some locusts flying south and others north, whilst others again have an easterly direction.

The returns for September of last year, as indicated in the subjoined statement, showed a very grave position, and foreshadowed what actually occurred—a heavy deposit of eggs over a great portion of the Colony.*

* The hopper season last year, it will be remembered, was greatly mitigated by the abundance of egg-parasites which are calculated to have destroyed two-thirds of the eggs laid.

Date.	Locality.	Direction of Flight, etc.	Date.	Locality.	Direction of Flight, etc.
FIRST WEEK.			SECOND WEEK.— <i>Continued.</i>		
September, 1907.			September, 1907.		
1—	Albert Falls (f l s)	S W	9—	Verulam	nil
	Noodsberg (v l s)	N W		Paulpietersburg	S E
	Wartburg (v l s)	N-S	10—	Greytown (v l s)	O
	Swaiman's Location	X		Crammond	N
	Impolweni Mission	X		Harburg	O
	Krantzkop	S		Pivaan's River	N
	Moguntia	X	11—	New Hanover District	O
2—	Ndwedwe (l s)	W		Mabendlhana, Ixopo	O
3—	Krantzkop (3 swarms)	X	12—	Albert Falls (v l s)	S
4—	Mid Illovo	X		Claridge	N
	Eshowe	S		Mapumulo	E
	Albert Falls (l s)	N		Mtunzini (l s)	NW
	Eshowe	S		Nongoma (v l s)	SW
	Krantzkop (2 swarms)	X		Umtamvuna (v l s)	W
5—	Mid-Illovo, Kleinthal	X		Manderston (l s)	W
	Mtunzini	S		Ndumu (v l s, from across border)	S
	St. Faith's, Ixopo	S W	14—	Glendale	S E
	Eshowe	S	Police Station reports for week ending—		
	Hilton Road	N	Tabankulu (Vryheid, Nqutu, Babanango, Tongaat, Avoca, Scottburg, Umhlali, S. C. Junction, Verulam		
	Mid-Illovo, Stirling	X	nil		
6—	Mid-Illovo	X	THIRD WEEK.		
	Ndwedwe (all over district)	X	15—	Insuzi	NW
7—	Richmond, Rosebank	X		Ingwavuma	X
	Howick	N	16—	Springvale, Ixopo	X
	Mtunzini	O		Vryheid District (several swarms)	O
Police Station reports for week ending—			17—	Harding, Mt. Pleasant	SW
	Nqutu, Red Hill, Bluff, Tongaat, Hillcrest, Babanango, Impendhle, Umhlali, Vryheid (Leuwnnek), Ndumu, Maputa	nil	18—	Cato Ridge	N
SECOND WEEK.				Stanger (l s)	O
8—	Greytown, Ematimatolo	N E		Highflats	N E
	Paulpietersburg	E		Ismont	O
	Sinkwazi	W		Harding	W-E
	Glendale	W		Stanger (l s)	S E
	Mapumulo	X	19—	Mapumulo	O
	Nkandhla	S E	21—	Ndwedwe	O
	Noodsberg (v l s)	X		Reit Valley (l s),	NW
9—	Empangeni	N E		Mid-Illovo	E
	Dalton	E	Police Station reports for week ending—		
			Tongaat, Umhlali, Avoca, Verulam, Scottburg, Nqutu, Babanango, Isipofu		
			nil		

Date	Locality.	Direction of Flight, etc	Date.	Locality.	Direction of Flight, etc.
FOURTH WEEK.			FOURTH WEEK.— <i>Continued.</i>		
September, 1907.			September, 1907		
22—Richmond		NE	28—Springvale		X
Umquahumbi Valley		X	La Mercey (biggest swarm for years)		S W-E
25 Mehloinyama (1 s)		X	Camperdown		S
Eshowe		S	Tongaas		N E
Ndumu		S	Umquahumbi		S E
25—Umtamvuna (v 1 s)		W	Doesburg		S E
Verulam (1 s)		N E	Mt. Edgecombe		N
Kearsney		W-E	Verulam		N
Empangeni (2 swarms)		N E	Ottawa		N
29 —Tongaas (2 v 1 s swarms)		W & E	Inyoni		O
Nongoma (v 1 s)		S	Nongoma (v 1 s)		E
30—St. Faith's		X	Inchanga		S W
26 —Empangeni		N W	Melmoth (v 1 s)		N E
Stanger (v 1 s)		E	Melmoth (1 s)		S
Nongoma		S	Police Station reports for week ending—		
Inyoni (supposed to be laying eggs)		N W	Ingwavuma, Nqutu, Babanango, Mehloinyama, Avoca, Leuwnek, Impendhle, Ematimatolo		nil
27 - Stanger (1 s)		E	30—Murchison v 1 s)		N W
Umhlali (1 s)		N	Mid-Illovo		S W
Ixopo (v 1 s)		N	Equeefa (free for past month)		
Mseleni, Ingwavuma		S E			
Darnal		N E			
Ingwavuma		N E			

A comparison of the above statement with that for the corresponding period of this year, shown below, would certainly seem to justify the assumption that the campaign now being prepared for will be a light one.

Date.	Locality.	Direction of Flight, etc.	Date.	Locality.	Direction of Flight, etc.
FIRST WEEK.			SECOND WEEK.		
September, 1908.			September, 1908.		
1—Mtunzini		O	8—New Hanover		W
2—Inanda (1 s)		W	9—Mapumulo		W-E
4—Glendale		E	Mapumulo		N E
5—Thring's Post, Richmond		X	10—Babanango		O
Police Station reports for week ending 7th September—			11—Nkandhla s)		S
Mehlominyama, Ingwavuma		nil	Nongoma (v 1 s)		S

Date.	Locality.	Direction of Flight, etc.	Date.	Locality.	Direction of Flight, etc.
SECOND WEEK.— <i>Continued.</i>			THIRD WEEK.		
September, 1908.			September, 1908.		
14	Mapumulo	N	15—Mapumulo		N E
Police Station reports for week ending 14th September—			Nhlagazi Stream, near Mapumulo		
Ematimatolo, Thornville Junction, Isipingo, De Jagers, Lower Tugela, Mehlomyama, Bluff, Mooi River, Woodside, Krantzkop, Hamburg, Avoca, Inyoni, Oliver's Hoek, Hill Crest, Scottsburgh, Hill Top, Umtamvuna, Weenen, Noodsberg, Malvern, Babanango, Bergville			Mapumulo		O
			Mtunzini		S
nil			Police Station reports up till the 17th September—		
			Inadi, Pinetown, Stanger, South Coast Junction, St. Faith's, Umbizane, Sea View, Murchison		
			nil		



Peach Aphis.

Careful watch should be made for peach aphis during this month, and on the first sign of the presence of either the black or green insects the trees should be thoroughly sprayed with paraffin emulsion or McDougall's "Lion" brand nicotine sheep dip, applied at the rate of 1 part of dip to 70 parts of water. The formula for the preparation of paraffin emulsion is given below, and should be followed carefully in order that a good emulsion of the oil and water may be obtained. Nicotine sheep dip solution is easily prepared and its application, moreover, is attended with extremely satisfactory results.

Whichever mixture is adopted should be applied in a fine mist; a "Success" bucket pump, with the nozzle which is usually supplied properly adjusted, will do admirably. One must not expect, in dealing with this insect, that the one spraying will be effectual in cleaning the tree. Owing to the peculiar non-sexual method of reproduction common to all the members of this family—*Aphidae*—the survival of but one insect may provide the nucleus of a further infestation.

If taken in hand now, however, the pest is one that may be easily controlled by the application of any of the contact insecticides; at this season of the year the colonies are weak numerically, due to the work of parasites, and also to the retarding effect exercised by the lower temperature of the winter just passed on their powers of reproduction.

When neglected, however, control over the insect is not so easily acquired, and I have seen instances where within a few weeks the leaves of peach trees were so curled and distorted that they provided an im-

penetrable shelter for the aphids, in which they rested secure from the application of any insecticide, no matter with what thoroughness it was applied; but these were cases of gross infestation. Taken in hand in time, no fear need be entertained on this insect's ravages.



Fruit Fly.

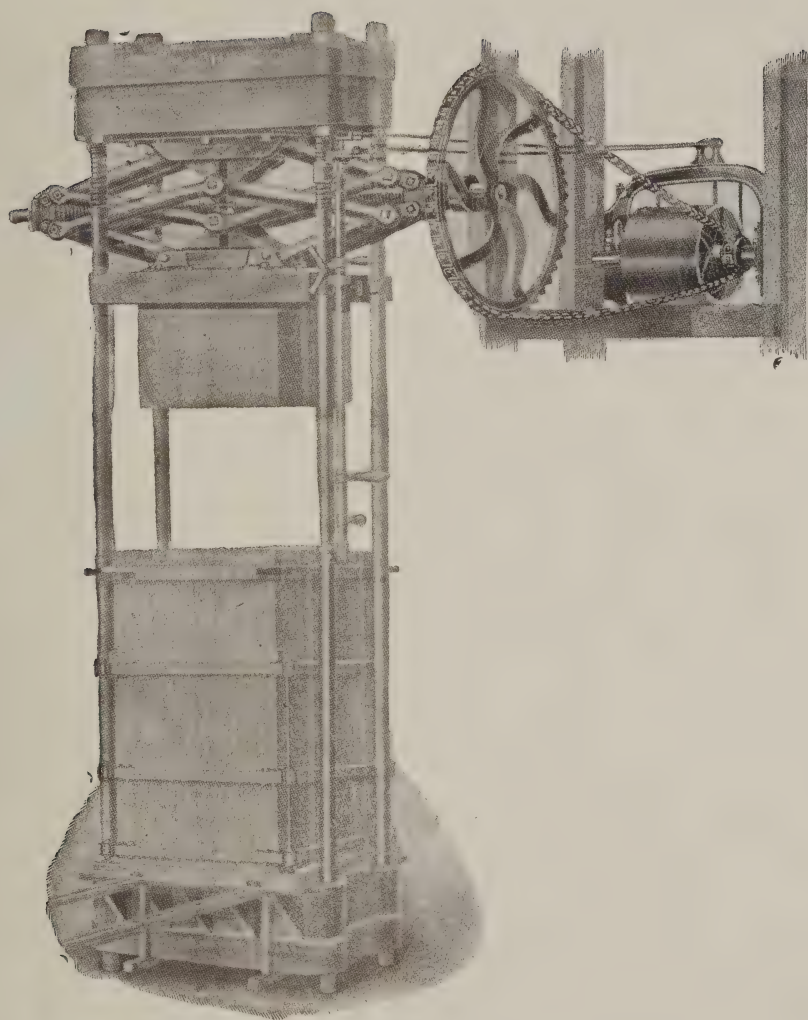
Writing under date of the 12th of September, a Durban correspondent advised that he was posting a few specimens of peaches which had been punctured by the fruit fly.

On examination this proved to be correct, notwithstanding the earliness of the season, and the fact that the bulk of the fruit measured but from one to one and a quarter inches in length, and was, of course, very hard and green.

It is obvious, therefore, that peach trees on the Coast should be netted about the end of August in order to avoid the fly. Material suitable for this purpose may be obtained from Messrs. Steel, Murray & Co. in pieces 40 yards long by 2 yards wide at 12s. 6d. per piece.

We are informed by Messrs. Duff, Eadie & Co., the secretaries of the Royal Agricultural Society of Natal, that the following dates have been fixed for the next Show of the Society, viz., 17th, 18th and 19th June, 1909.

The question of providing expert advice and assistance to agriculturists in connection with the use of steam pumps for irrigation purposes in the Bombay Presidency has been considered by the Government, who have appointed a mechanic, and a workman under him, whose services will be placed at the disposal of the Director of Agriculture for the purpose. The investigation of water-lifting, well-boring, the survey of sub-soil water, and the introduction and use of agricultural machinery are matters which are under close consideration, and it is not unlikely that the Government will appoint a duly qualified agricultural engineer, to be selected in England, to deal with these matters.—*Standard of Empire.*



FIBRE MACHINERY.—V.
Knuckle Joint Box Baling Press.

Natal Land Board.

MONTHLY MEETING.

THE Land Board held its usual monthly meeting on the 8th and 9th September, when 48 applications for land in various parts of Natal and Zululand were considered. Out of the 48 applications three had to be refused on account of the applicants not having sufficient capital to warrant their being granted any land. Thirty-two of the applicants had been interviewed by the different members of the Board at different centres, thereby saving the would-be settlers the expense formerly entailed in interviewing the Board in Maritzburg.

The nine acre holdings which have recently been advertised as available for allotment near Middleton's Station, on the South Coast, were over applied for, and the Board hope to obtain the Minister's authority to survey off certain land in the neighbourhood of the Winkel Spruit Experiment Farm into lots of from 10 to 25 acres each. It has been considered advisable to increase the area in some cases on account of the demand from a number of applicants to obtain, if possible, blocks of lands on the South Coast of an area of not less than 25 acres.

A number of applications having been received for some of the farms lately surveyed off in the neighbourhood of Colenso, the lands in question were ballotted for, and it is hoped that in a very short while the various successful allottees will be at work on their holdings.

The Board were pleased to note that a number of applications were now coming to hand for the lands on the Oribi Flats and at Umtamvuna since the valuations placed on the same had been reduced by the Minister of Agriculture. It is thought that before long the whole of these lands will be in occupation by Europeans.

It was pointed out that a number of applicants who have recently been accepted by the Board were waiting the passing of the Bill by Parliament dealing with the conversion of the lands at Winterton and Varkensfontein to freehold before proceeding with their applications.

The next meeting of the Board has been fixed for the 6th October, 1908.

During the first eight months of this year Natal exported to other States of the S.A. Customs Union South African produce to the value of £166,994. This is an increase of £6,000 over the value of such exports during the same period of last year.

Experiment Farms.

WEENEN.

THE Curator of the Weenen Experiment Station reports as follows to the Director of Experiment Stations for the month of August:—

The work undertaken by me since taking over my duties as Curator from my predecessor, Mr. Hosking, has been principally confined to irrigation of crops planted and putting the orchard into shape.

In the orchard I have ploughed all the cultivated sections; irrigated about six acres of same adjoining the road, and planted this area with Canadian Wonder beans. This will serve the double purpose of preventing soil-wash during the heavy summer rains (as usually happens during the wet season), and at the same time may supply a certain amount of nitrogen to the soil by reason of the nodules on the roots left in the soil.

The crops of cereals on the lower portion of this station have made splendid growth, and some of the varieties are beginning to come into ear already, foremost amongst these being barley-wheat, meenenieu-wheat, and Indian oats.

The different plots of lucerne experiments are making fair growth, and from some of these very good results will likely be obtained during the coming season; detailed results of these and other experiments will be furnished you when available.

Splendid growth has been made by the "Yorkshire Hero" peas. A noticeable feature in connection with this crop is the necessity for early planting. Good results are not likely to be obtainable if planted later than the 15th May—end of April to middle of May appearing to be the best time. This variety appears to be less hardy than the "Black-eyed Susan," and therefore requires better treatment as regards soil and manure.

On the plot of "Thousand Headed" kale, about one acre in extent, a very striking feature is noticeable in the difference due to various methods of applying water. One half of the plot was irrigated before ploughing, harrowed immediately after being ploughed, and then planted; the other portion being ploughed, harrowed and planted dry, and irrigated after planting. The former portion germinated immediately owing to the moisture in soil, and subsequently made good growth; while the portion irrigated after planting made a miserable growth. All other conditions as regards planting seed and manures were exactly similar, both plots being planted on the same day.

To provide for planting the coming tobacco crop, I have sown beds of seeds of the following varieties, viz.:—"Goldfinder," Yellow Orinoko,

Cuban, Turkish, Turkish Aromatic. By the courtesy of Mr. McPherson, I have had a number of photographs of the most interesting features of this station taken by him, and will send these on when available.

The three students in my charge, namely, Messrs. Gray, Torrente, and Robertson, are giving every satisfaction in their work, and have been of very considerable assistance to me in carrying out my numerous duties.

All the deciduous trees in the orchard have been sprayed with Bordeaux Mixture, and the citrus, which were badly affected with scale, have been sprayed with McDougall's insecticide.

In a portion of the lower section of orchard a number of fig trees have been planted to replace citrus trees which died some time previously owing to unsuitability of soil conditions.

Most of the varieties of fruit trees in orchard are bursting into bud, and shortly there should be a pretty show of bloom.

The general appearance of the whole station is distinctly healthy, which latter should be a highly interesting and instructive institution to the land-owners in the settlement. That a greater interest is being taken in the Experiment Station is evident by the increasing number of visitors, who, generally speaking, are considerably interested in everything shown them.

E. R. GESSNER,
Curator.

WINKEL SPRUIT.

The Manager of the Winkel Spruit Experiment Farm reports as follows to the Director, Experiment Stations:—

In submitting a report for the month of August, I have to acknowledge the splendid work done by the four students now stationed here. Early in the month I found it would be impossible to grub the stumps from the land being cleared for orchard in order to allow of removal before the deciduous trees would start their spring growth. Consequently, after clearing the scrub from the land, we dug holes 3 to 4 feet in diameter and 18 to 24 inches deep and removed and transplanted between 800 and 900 trees, the work not being completed any too soon as can be seen by the foliage already covering the apple and quince trees. None of these trees seem to have received any check whatever from their removal the conditions being very favourable as nearly an inch of rain fell immediately after removal of deciduous trees. Mangoes and avocado pears have suffered greatly since their removal owing to the hot winds which blew all day on Sunday, the 30th ult., the temperature reaching 101 degs. in the shade. Loquats, guavas and oranges are holding their own, as also are the Eugénias. Rain is wanted badly, as the continuous winds which

generally prevail at this season of the year are drying up the crops and sucking every drain of moisture from the soil.

Besides the transplanting of these trees we have transplanted several thousand onion plants, the majority of which are making good growth. A heavy dressing of kraal manure and a residue lime and superphosphate experiment is being carried out with these onions, and it will prove interesting to note the results during the coming season.

About five acres of land has been cleared and ploughed up between the line of Araucarias and the railway and extending to the vlei, it being our intention to plant this land with Albizzias and Eugenias, but unfortunately, owing to the breaking of pole of disc harrow, this work will have to be suspended for a time.

The piece of new land about five acres adjoining the vlei on eastern side and selected for Distance of Planting maize experiments has been cleared and part of it ploughed. The soil is a dark loam and fairly uniform throughout and should enable us to secure some authentic results in this valuable experiment.

A large open drain has been dug from the water hole in valley to the banana plantation and then taken in two sections along each side of the bananas to shed; several small latterals and two large ones, one extending to roadway and the other to pineapple section, also opened up.

These drains should prove of immense value to the orchard as most of the valley is little else but solid clay where water lies from one year's end to the other. Several of these latteral drains were opened up by the late orchardist at the lower end of the citrus plantation and have converted a veritable swamp into productive soil.

Sixteen different varieties of Aloes arrived here from India and have been planted out next to the *Agave sisalana* plantation, and without any exception the lot arrived in good condition. These, with a consignment of China Aloes about to arrive, should at all events give us plenty of variety.

One ox strayed from the paddock during the month and was not found until the following day when I received word it was amongst the Illovo Sugar Estates cattle, and as these were dying daily with East Coast Fever it was thought advisable to dispose of him, and this was done. The rest of the oxen are quite healthy and are working daily. The pigs have increased during the month by about 60, giving us a total of nearly 90 to feed.

W. JOHANSEN,
Manager.

Among the Farmers.

THE ASSOCIATIONS DURING THE MONTH.

DURING the past month or two many of the farmers' associations and agricultural societies have held their annual meetings, and we have received a number of interesting reports. Considerations of space prevent our publishing in this issue all that have come to hand, and we are obliged to hold over, in particular, until next month two long and interesting reports from the Upper Biggarsberg and Malton Farmers' Associations.

We would remind readers that this section is open to all the farmers' and similar associations in the Colony, and that we shall always be glad to have reports of monthly and other meetings, which are read with considerable interest by members of associations in other parts of the Colony.

HATTING SPRUIT.

The fourth annual meeting of the Hatting Spruit Farmers' Association was held at Hatting Spruit on Friday, 28th August, there being some sixteen members present, including Mr. J. Campbell in the chair, and the secretary, Mr. R. J. Hearn. The notice calling the meeting having been read, the minutes of the previous meeting were read and confirmed. The President then read his report as follows:—

Gentlemen,—This being our fourth annual meeting, it is again my duty as your president to furnish a report on the past year's work of the Society. There have been seven meetings of the Society during the year and one stock sale. The records of our meetings all show an excellent attendance of members, and I would like to take this opportunity of thanking the mine managers and those gentlemen from Dundee, Glencoe and Dannhauser who are members of the Society for their regular attendance and the keen and active interest they have at all times displayed in the affairs of the Association. The one stock sale held in January was most successful considering the disadvantages under which we labour owing to E.C. Fever restrictions, and resulted in a very fair amount being placed to the credit of the Society. I am most happy to inform you that the membership of the Association has increased very considerably and that the Association is in a sound financial position, as your secretary will show in his statement of accounts, there being a respectable balance on hand. Messrs. Tandy and Smallie were elected as your delegates to the Agricultural Union, but I very much regret that

owing to unforeseen circumstances arising neither of these gentlemen could possibly attend.

MEALIE CROPS.

About ten months ago there were bright prospects of an excellent mealie crop and of this district participating in the export trade. Unfortunately this district, along with other parts of the Colony, was visited with exceptional hailstorms, and, to crown all, where in parts the hail had been escaped we experienced an unseasonable frost, practically doing away entirely with the mealie crop. I regret the top grub and cut-worm did considerable damage to crops in the early part of the season, but I think that with a little intelligence and care these pests can be overcome. I hope, gentlemen, that, notwithstanding the severe set back the farming community have experienced this last season, we will all go forward with redoubled efforts. On the whole this district has made wonderful progress in mealie growing, the quantity of mealies reaped and the yield per acre are on the whole steadily increasing. The only implement used fifteen years ago was an American 75 plough and some sort of a harrow. To-day we find some of the finest and most up-to-date implements the world can produce. I cannot say very much with reference to other crops; only, it is with pleasure I notice the ever-increasing demand for good, sound potatoes, and those who were fortunate with their crops are now obtaining a good market.

EAST COAST FEVER.

This black cloud still hangs over us restricting trade and agriculture at every turn, so that we are compelled to take low prices for our stock and produce, besides having great difficulty in getting produce and goods to and from the station. It is to be hoped that the new system of small districts each with an Advisory Board will greatly assist in the prevention of the spread of the disease. I think that the man with his farm well fenced has very little to fear, but the man who sits down and trusts to Providence runs the risk of losing all his cattle, just as the hordes of indolent Natives in Zululand and in locations in Natal have lost and are now losing to-day. It is most fortunate that our Veterinary Department now thoroughly understand the disease and that their views are now becoming recognised facts in spite of severe opposition. I am of the opinion that Natal would be an ideal cattle country if we could get rid of the tick, and it now looks as if this could be done by dipping or spraying, and that dipping to eradicate the different tick diseases in cattle is quite as necessary as dipping sheep is for scab. It is high time that the pet theory of burning them was dropped.

DAIRYING.

Perhaps it is somewhat inopportune to discuss this after Tick Fever. This being one of the coming and most important industries of the Colony

I cannot pass it over without making a few remarks thereon. I am pleased to say we have a ever-ready and increasing market for our cream, and am pleased to note the number of cream cans sent away from this station both to the Nel's Rust and Mooi River Creameries. I very much regret that the general depression still hangs over South Africa, but I think that the great mineral resources (which we undoubtedly possess) when developed will bring better times and give the agricultural and pastoral industries another lift forward. Gentlemen, we may be very grateful that we have in our midst the larger portion of the mining industry of the Colony, which ensures an ever ready market for our produce, etc., and I am sure every member of the Society deplores the set back this industry has lately experienced, and we all extend our sympathy to those who suffered through the unfortunate occurrences both at the Giencoe and Cambrian Mines. In concluding this report, gentlemen, I wish to heartily thank you all for the cordial support you have given me while I have had the honour to preside at your meetings and for the keen interest you have displayed in the affairs of the Association, and especially do I thank the secretary for the willing and energetic way he has performed his share of the work. I would also like to thank Mr. Hearn for his kindness in placing at our disposal a room in which to hold our meetings.

In conclusion, the retiring President was accorded a most hearty vote of thanks.

INGOGO.

The Ingogo Farmers' Association held its annual meeting at Ingogo on the 28th August, when the president (Mr. Angus Wood) read his annual report as follows:—

Gentlemen,—During the past year we have held four general meetings and several special meetings, all of which have been well attended.

The past season has not treated us all alike. In some cases owing to the drought, after the new year, the crops have been a dismal failure, whilst others who were fortunate enough to get local showers at the critical time have had a more or less average season.

Prices for produce have been on the whole satisfactory.

EAST COAST FEVER.

Although another year has gone round and this disease has made alarming headway in different parts of the Colony, I am glad to say it is still as far from us, or nearly so, as it was twelve months ago.

You did me honour in sending me as your representative to the special Congress which Government called at Maritzburg last April, to consider the position as regards East Coast Fever. At that Congress, Government informed us that in spite of all the measures they had taken

to combat the disease everything had turned out to be a failure, and the disease was spreading by leaps and bounds, and in large tracts was completely out of hand. We were then invited as the representatives of all the cattle-owners in the Colony to suggest what were the best steps to be taken, and these recommendations would be adopted by the Government.

I advocated the splitting up of the Colony into smaller districts, so as to ensure better supervision and administration. I further advocated the control of the movement of all cattle, and in order to detect the unauthorised movement of cattle, I strongly emphasised the necessity of having all cattle branded with a district brand. All these recommendations were subsequently embodied in the resolutions that were adopted by the Congress, and I am glad to say are in force to-day.

I think we all admire the whole-hearted and energetic manner in which the Minister of Agriculture has endeavoured to rid the Colony of this terrible disease, and although every attempt has turned out a failure and has cost the Colony a lot of money, we all know that everything was done for the best, and the value of the experience and knowledge which has been gained is almost worth the money that has been spent.

Now that the Government has given the District Advisory Boards full power to act with a view to controlling the disease, I think it is highly desirable where the sanction of the Minister is required, before enforcing any regulation which the Advisory Board may think necessary, this sanction should be given with as little delay as possible.

Unnecessary delay in this respect has occurred, and now when the period of inactivity of the ticks is coming to an end, and everything such as handling ought to have been completed, we find we are very little further forward, and for no apparent reason.

As the branding irons for this district are ready, I think it is desirable that we commence branding our cattle at once, for every day that is lost, I feel there is a danger of getting cattle smuggled into the district, and probably the disease with them.

This disease has had a deplorable effect on the value of our cattle, and except for prime fat slaughter oxen they are entirely unsaleable.

The only hope of getting any return at all from the cattle in the near future, is to go in for dairying, which a good many are now doing in the district.

MISCELLANEOUS.

Owing to the large amount you paid in connection with the Newcastle Creamery, your balance sheet shows a small debit balance. If, however, the overdue subscriptions were paid, and they ought to be paid, we would have a considerable balance in hand.

The Government are to be congratulated on the Bills they are introducing into Parliament this Session, dealing with the Asiatic question. I only regret they did not show more backbone in connection with the

Bill dealing with the stoppage of importation of more coolies into the Colony by referring it to a committee, instead of fighting it out to the bitter end. I feel sure if they had appealed to the electors of the Colony, they would have found a tremendous majority to support them on this question.

Before closing this report, I must refer to the deplorable tragedy, when we lost our secretary and treasurer, the late Mr. T. C. Watt. Ever since he came to this district he was always ready and willing to help in anything for the general welfare. He will be sadly missed here, not only for the work he did for us, but for his general good fellowship.

The members of his family have our profound sympathy.

WEENEN.

The annual general meeting of the Weenen Agricultural Society was held on the 29th August at Estcourt. The president, Mr. Allan Stuart, was in the chair; and among the other gentlemen present were the Right Hon. F. R. Moor, P.C., Messrs. A. Clouston, W. Carter, H. Blaker, J.P., C. Haw, A. E. Haviland, W. Lyndon, S. Vaughan, E. B. Griffin, J.P., C. Williams, R. H. Ralfe, H. G. Wheeler, W. R. Ralfe, J.P., J. Ralfe, J.P., J. R. Van der Merwe, J. Rencken, J.P., T. H. Hindle, F. C. Robinson, F. C. Schiever, hon. treasurer, and E. Cautherley hon. secretary.

The delegates to the recent conference of the Natal Agricultural Union (Messrs. A. Stuart and J. H. K. Muller) handed in their report, and were thanked for their services.

FINANCIAL REPORT.

The hon. treasurer (Mr. F. C. Schiever) then submitted his annual report, together with the Finance Committee's report for 1908 as follows:

"Your committee, in pursuance of notice, met and carefully went into the financial position of the Society's affairs during the year ending August, 1908, and judging by the balance sheet kindly placed at our disposal by the hon. treasurer we find that the shortfall during the year is principally caused by the commission on stock sales, hall revenue, and withdrawal of Government annual grant. This is so serious in the general welfare of the Society that it behoves every member to at once consider the liabilities and difficulties your treasurer has to contend with to make ends meet. And although the statement of accounts, ending August, 1908, shows a balance of £12 4s. 8d. in the bank, this amount we do not consider when carried forward to your next financial year sufficient to meet its liabilities.

"Owing to the various causes enumerated above, which your Society in the past has enjoyed, we feel confident that had the prize list for the last show not been considerably reduced, and great efforts made to collect subscriptions, our position to-day would have been worse than what it is.

We therefore recommend some consideration should be shown in the direction of reducing such items as appear in the treasurer's statement, gas account, Society's special expenses in connection with smoking concert, ball, printing account, and interest on kraal debentures. With the latter we are in doubt as to whether it was ever intended that interest should be paid to debenture holders in case no revenue was derived from the use of the kraal. The cricket club might also be approached, with a view to their claim for the £15 per annum to stand down until such times as the Society's financial position is bettered.

"In conclusion, we further recommend that, taking into account the heavy debt on the hall, a general appeal should be made to members of the Society and residents of this county for subscriptions either in money or kind, for the purpose of reducing the same.

"Signed on behalf of committee,

"E. HODGSON, Chairman."

PRESIDENT'S REPORT.

Some considerable discussion of the financial affairs of the Society ensued, and the President then read his annual report as follows:—

"Gentlemen,—I have much pleasure in presenting to you the 43rd annual report of the Weenen Agricultural Society. In doing so I am glad to be able to congratulate you on the fact that our district still continues to show signs of vitality and progress in spite of the very great and general depression under which the whole Colony has been suffering, and that our show held on June 16th last was a success.

"*Horses* came forward in about equal number as was shown in 1907, but there was a marked improvement in the get-up and quality of the animals, the saddle horses being declared by the judge to be a very fine lot.

"*Cattle*.—It would be waste of time for me to tell you why cattle were unrepresented on our show. Most of you know more about the reason than you are willing to believe.

"*Sheep* came forward in good numbers, and were declared by experts to be a very fine lot indeed. In proof of this I may point to the fact that one member of our Society, who was very successful here, was also very successful at the Durban Show. I think those of our members who are the owners of good sheep farms, and who possess a good flock of sheep, may well congratulate themselves on the position they hold to-day compared with those of our members whose wealth may be in horned stock. The inventive genius of man has found a substitute for many things, but none have yet found a substitute for the wool of the sheep.

"*Pigs* were forward in larger numbers than have been seen at our show for many years. A special prize having been offered for the best five pigs fit for bacon brought out five entries, all very fine animals. Now that we have a bacon factory at work in the county, and the Nel's

Rust Bacon Factory will be in working order by the end of the year, we may expect a steady demand for pigs.

Poultry.—In the poultry section there was a fair display, and splendid examples of breeds were shown. I would, however, suggest that more attention be given to utility breeds. Table birds and egg producers are what practical farmers should aim at.

Cereals were not quite up to 1907 show, neither in number of entries nor quality, but were nevertheless a fair show. I regret to have to report in this county a heavy shortfall in our mealie crop. Grab, drought, and early frost were responsible for this. It is much to be regretted that this should have happened, as through the assistance of our Government and some of our enterprising merchants a good export trade in mealies has been established during the last year. The cause of this shortfall was, however, beyond the control of man, so we must bow, and hope for better crops in the coming year.

Roots.—The foregoing will apply equally to our show of roots.

Manufactures.—In this lay the principal success of our show. The ladies of the county, evidently ashamed at the poor display in our hall in 1907, made up their minds to make amends in 1908. This they did most nobly, and gave us such a show in our hall of manufactures and preserves as has not been seen before in Weenen County. I ask the ladies to accept my sincere thanks, also the thanks of the Society, for what they did in helping to make our show the third best in the Colony.

Implements.—A very poor display was made, but in harness and saddles Messrs. Lyle Bros., of Maritzburg, and Mr. G. Bull, our local saddler, made a very good display.

Meat.—In our hall Messrs. Cook & Co. made a fine display of butcher's goods that could not have been beaten in Maritzburg or Durban.

Horticulture.—In our horticultural department we have had two shows, the first on November 13th, 1907. Awards were made, but no prizes given. The proposal to hold this show came from Mr. Vaughan, who had just returned to the Colony, full of all the beautiful things he had seen in our Homeland. There was no loss to the Society through holding this show, and it proved a success, not only as a flower show, but as a social function, and gave the town and country people a pleasant afternoon together. Our usual flower show was held on February 5th, 1908, and was a success, both financially and socially, and I must here ask Mr. T. J. Nunn to accept my thanks and the thanks of the Society for the way he worked in the interests of the Society in collecting donations and special prizes.

"It is with extreme sorrow that I have to record the death of two of our fellow-members in the decease of the Hon. George Turner and Mr. T. Woods. Both of these gentlemen had spent the best part of their

lives in Weenen County, and had worked for the advancement of the Society and this county and the Colony. Mr. Woods at one time held a seat in the Parliament of this Colony by popular vote, and when responsible government was established Mr. Turner was nominated to a seat in the Upper House. This he retained to the day of his death. Their memory ought to be an example to us for thorough directness and uprightness in whatever business we undertake to do.

“East Coast Fever.”—So far as is at present known, Estecourt Division is in no worse position than it was this time last year, but the County of Weenen and the Colony is very much worse. The so-called ‘stamp-out’ process of the Government came to an end last March for want of funds. On March 25th and 26th a meeting was held in Maritzburg of all Chairman of Advisory Boards and Presidents of the Agricultural Societies throughout the Colony, by the invitation of the Minister of Agriculture. I attended as Chairman of the Estecourt Advisory Board, and Mr. E. B. Griffin, J.P., represented this Society. At that meeting resolutions were carried placing the whole Colony under Advisory Boards. Both the Prime Minister and the Minister of Agriculture spoke, and repeatedly told the meeting that all the powers the Government had under East Coast Fever Acts would be handed over to these Boards. These powers have never been given, and, in my opinion, to-day these Advisory Boards are of little value to the Colony.

“Agricultural Union Conference.”—Mr. J. H. K. Miller and myself attended as your delegates, whose report has been presented.

EXPORT TRADE.

Gentlemen, I hold that this county during the last twelve months has done more to show that an export trade can be done from this Colony than any other county in the Colony, first, the Messrs. Moor Bros.’ export of lambs, Messrs. Abbott Bros.’ export of beef, and the Rosetta Co-operative Company’s export of potatoes.

“In my opinion, the time has not arrived for the export of meat of any description from this Colony. It will be better for this Colony and for us to close our gates against all classes of frozen meat; let us try to feed ourselves, and when we have a surplus these gentlemen have shown us what we can do with it.

“Potatoes are on a different footing. Given a reasonable rainfall and a profitable market, we can produce potatoes in any quantity. But, so far as I can understand the reports of those salesmen who handled the Rosetta shipment, these potatoes must be new to be profitable, and still in the scraping stage. Whenever the skins get set so that they have to be peeled, the price drops about £2 per ton. To get them to England in this condition they must be carefully handled and packed in peat dust. The peat dust has to be imported at a cost of £5 per ton. Here, again,

is an opening for any farmer who may have a deposit of peat on his farm to supply this, and keep the money in the Colony.

FINANCIAL MATTERS.

“As our hon. treasurer has told you, all Government grants have been withdrawn. To finance the Society we have had to fall back upon subscriptions and donations. Our three members came forward handsomely, and Weenen County is fortunate in having three gentlemen to represent them who are always willing and ready to help, and uphold the institutions of their county. I have also to thank the following gentlemen who so kindly gave donations:—Messrs. Randles Bros., of Glen Lyndon; Mr. Jas. Henwood, Messrs. Cook Bros., G. R. Richards, Esq., F. I. de Waal, Esq., the European shopkeepers of Estcourt, and a large number of gentlemen who gave prizes. The thanks and gratitude of the Society are due to Mr. R. Ralfe, sen., who, although not in the best of health, went to Durban and Pietermaritzburg and collected a large sum of money and a number of valuable prizes. Those merchants and tradesmen who so liberally subscribed to Mr. Ralfe we thank most sincerely. I will now appeal to the farmers of this county to come forward and support our Society and enable it to reduce the bond that is still on our hall and showyard. The bond is not a large one; if the farmers of this county would rise to the occasion it might well be cleared off in one season. Were this done the Society would be one of the most prosperous in the Colony. I am aware other associations have sprung up in the county, and have to be supported. These associations are all doing well, but I would remind members that this is the parent Society, and therefore has a claim to their support. It will be seen from our hon. secretary's report that the financial position of the Society might be much better, but it cannot be said to be hopelessly bad. Mr. Joseph Dixon is still the Society's auctioneer, but our stock sales have fallen off to *nil*. Our hall and showyard is in good order and condition, fair wear and tear excepted. In conclusion, I wish to offer the thanks of the Society to the judges who officiated at the recent show and carried out their duties so satisfactorily, and to all those gentlemen who so kindly acted as stewards. I tender my own thanks to our yard steward, Mr. A. L. Clouston, to our hon. secretary, Mr. E. Cauterley, our hon. treasurer, Mr. F. C. Schiever, who have all done their very best to make my year of office a pleasant and enjoyable one.”

NEW HANOVER.

The annual general meeting of the New Hanover Agricultural Association was held on Saturday, 9th September, in the Agricultural Hall at New Hanover.

The President, Mr. G. C. Mackenzie, of Buccleuch, occupied the

chair. Among those present were Messrs. W. W. Bentley, A. F. Mackenzie, R. H. Oellermann, J. A. Potteril, W. Schroder, J.P., the Rev. James Scott and Messrs. Jno. Christie Watt, J.P., J. Wesley Watt, and W. H. Westbrook.

PRESIDENT'S ADDRESS.

The President delivered the following address:—

The Association is now in its fifteenth year, and there are at present 80 members on the roll.

During the past year, six special general meetings have been held, at which there was an average attendance of 16 members, the largest attendance being 23, and the smallest attendance being 11. The subjects discussed at these meetings included East Coast Fever, Reduction in Veterinary Staff, Railway Rates, Customs Tariff, and Railway Facilities.

No committee meetings were held, none being considered necessary.

During the last three years our Association has considered it inadvisable to hold any show.

Our last show was held in 1905. In 1906, although preliminary arrangements were made for the holding of a show, it was eventually decided not to hold one, owing to the unsettled state of the Colony, and the fact that so many of the Militia of our Division interested in agriculture were on active service. In 1907 and 1908 no show was held, owing to East Coast Fever risks.

In the coming year I think the Association might take into favourable consideration the holding of a show, from which cattle might be debarred.

We all recognise the good work that has been, and is being done by the Natal Agricultural Union, and that it is a powerful force in working out the destiny of agriculturists in the Colony.

We cannot, however, have it too clearly driven home to us, that if individual members of agricultural associations do not take an active interest in their respective associations, and if agricultural associations such as ours are not properly supported, the Agricultural Union's power for good will be more or less weakened.

The individual members of agricultural associations have themselves to blame if their views are not brought before the Union with the object of having them fully considered by the Government authorities. We must see to it that every member of our Association has a good opportunity afforded him to state his views at our meetings, and we must also see that our Association is kept so equipped that the views of our Association are brought before the Union in proper form, so that the Union on approving of our views may take steps as will ensure them at least being well considered by the authorities.

If members will only think for a moment, they will see how valuable a privilege it is to have their views brought forward at our meetings.

Although our Association has enjoyed prosperity in the past, we must remember that success is only maintained by constant effort.

The Natal Agricultural Union is to-day a greater power in the Colony than ever it was. That point should be steadily borne in mind. The views it puts forward to the authorities are the combined views of the whole of the affiliated agricultural associations of the Colony, so far as such views meet with the approval of the Union, and we as an Association will not be doing our duty if we stand by and allow the other Associations to do all the work of giving birth to ideas.

I thank the members of the Association for the courtesy they have extended to me during my term of office, and I thank the office-bearers for the assistance they have given me in carrying out my duties.

The President was thanked for his address.

The treasurer's report showed that there was a credit balance of £180 16s. 9d. in favour of the Association.

Mr. G. C. Mackenzie was unanimously re-elected President.

It was unanimously resolved that a show be held during the coming year, if no unforeseen circumstance arises.

HIMEVILLE.

PRESIDENT'S ANNUAL REPORT.

At the annual meeting of the Himeville Agricultural Society, the president read the following report:—

Gentlemen,—It is my pleasing duty as President of the Himeville Agricultural Society to place before you at this our annual general meeting my report for the past year. There is no use in glossing over or disguising the fact that we have all had to go through a very anxious year, and unfortunately there is no one who can say when the clouds will begin to lift; but what I must try to impress upon you is that we must all hold together, with a fixed determination to combine in endeavouring to keep off the dread cattle disease called East Coast Fever. It is open for us to console ourselves when considering cattle plagues, that if in this Colony we did not have the dread disease of Horsesickness to regulate the market, in all probability horses would be selling at about £5 each, and in like manner if it were not for the obnoxious tick we might have cattle either selling at a mere bagatelle—or continual importations from Australia and other countries brought here to compete against us in our markets. Our policy should therefore be to strive by every precaution to save our cattle from Tick Fever, and if we succeed in keeping out this scourge then we shall have our surplus stock ready for sale at good prices should the disease die out in other parts of the Colony, or in the event of a cure or a preventative being discovered.

As you are aware, all Government aid to our Society has been dis-

continued, owing to the universal retrenchment. I strongly urge that in spite of the withdrawal of Government aid the Society be not retrogressive, but by carefully going into ways and means, planning out all details and cutting our coat according to our cloth, we must endeavour to continue in the future the good work done for agriculture by our Society in the past. This might be managed if we could increase our membership, and by cutting down outlay and expenses.

During the past year a number of our members have combined in a scheme for forwarding cream supplies to the Nel's Rust Dairy, and I must say that the energy displayed in sending such a long distance by road to the railway is worthy of success.

You will doubtless watch with interest the opening of the new Bacon Factory at Nel's Rust, and there is no doubt that if a ready market is established for the sale of "the gentleman that pays the rent," it will induce a number of our members to go in more largely for rearing pigs, which will help to feed the factory for mutual benefit. It is worthy of note, gentlemen, that the energetic manager of both the foregoing progressive industries was formerly from our own Division of Polela.

In our own district I am pleased to say the success of Mr. Fergus Hathorn's cheese factory is now assured, and it is such successful competition which, by producing as good an article in Natal as can be imported, and at a moderate price to the buyer and remunerative to the seller, will help the Colony to rely on its own resources, and keep the little money that is left to us within its borders.

During the past year we have heard much of the mealie export trade. It is open to question whether Natal can ever hope to be one of the regular suppliers of the Home maize market unless in occasional good seasons, but the assistance given in opening up with the Mother Country the mealie and fruit trades which we have received from our much-abused Government does it great credit.

In regard to the principal event of our Society during the past year, I wish to touch on some points in connection with our agricultural show, which was held at Himeville on the 14th of May last. I have to express regret that although this was our sixth annual show neither the Minister of Agriculture, nor indeed anyone representing the Agricultural Department deemed the function worthy of attendance. Probably, however, it may occur to this Department that when such resident farmers as, for instance, Mr. Harold Brown, can carry off premier honours in produce not only at Himeville show, but at nearly all the principal shows in Natal, not to mention his late successes in Johannesburg, the district where such produce is grown is at least worthy of a flying visit. We are all pleased to see at the show visitors and competitors from the Bulwer end of this Division, and I trust the friendly relationship now existing may long continue.

We were grateful to the various judges who came such long distances and gave their valuable services so willingly. Without good judges the awards would be of little satisfaction, and it must be borne in mind that the placing of the prize ticket by a qualified and expert judge is to a certain extent an education to many young farmers.

Gentlemen, these are not times to speak about the building of an agricultural hall. Some day I hope to see a building erected which may be used for a church, a school and for entertainments, as well as for an agricultural hall, but we shall need to wait for better times.

I must conclude by tendering my thanks to all office-bearers, committee and members for their willing support and kindly help in the working of our Society during the past year, and in particular to our honorary secretary, Mr. George Palframan, who, although a young man and new to office, still proved himself an enthusiastic and competent worker.

Gentlemen, in electing me for two years in succession as your president, you have honoured me, and, in now retiring from that office, I trust that my efforts in endeavouring to promote the welfare of our Society have given satisfaction.

An Act has been passed in the Cape Colony prohibiting the export of any Angora ram or ewe, by land or sea, to any place beyond the territorial limits of the Colony, except to a neighbouring Colony or State whose laws for the time being similarly prohibit the exportation of such animals.

When on a long journey it is well to see that one's horse is fed at regular intervals, and not too long ones. If he is cool, and is not going to be driven hard, he may drink when he wishes; but if he is hot and fagged he should have his mouth sponged out and then be given a half-bucket of water, with the chill off, into which two quarts of oatmeal have been stirred until the mixture begins to thicken. This will not only relieve his thirst, but will refresh and sustain him also; in the event of a long stage, it will obviate the ill-effects of a delay of an hour or so in arriving at the next place where the horse may be properly fed.

Exchange Reviews.

WHAT OTHERS ARE THINKING AND DOING.

AMERICAN official publications have figured largely on our table during the past two months, and the results of some interesting investigations and researches in agricultural and the allied sciences have thus come to hand. Space permits of notice here of only a few of the bulletins received, but we may be enabled to republish the subject matter of some of the others at some future date.

The first bulletin we open is one by Prof. R. F. Hore, of the U.S. Bureau of Animal Industry, on "Experiments on the Digestibility of Prickly-Pear by Cattle." Readers may remember an article which appeared on page 872 of last year's *Journal* embodying the results of the latest investigations concerning the value of cacti as food for stock as given in Bulletin No. 102 of the Bureau of Animal Industry under the joint authorship of Dr. David Griffiths and Prof. R. F. Hore. The bulletin now before us contains the results of experiments conducted to determine the digestibility of prickly pear, and thus to guide the feeder in the preparation of rations from this plant.

Among the conclusions drawn from the experiments, it would appear that when prickly pear is fed with cured fodders or grains the digestibility of both is increased. For this reason prickly pear has a greater food value than is shown by its analysis and digestion coefficients. The nutritive ratio, *i.e.*, the ratio of proteids to carbohydrates, is very wide for this feed, and in feeding it to all classes of animals, for whatever purposes, much better results should be obtained when it is fed with some substance of a high protein content. While the digestibility of the ash was apparently small, yet the large amount of ash contained in these plants caused more ash to be assimilated from a ratio equivalent to 15 pounds of dry matter than is ordinarily assimilated from an equal ration of alfalfa, which has a higher coefficient of digestion for its ash. The steers in this experiment seldom drank water when fed prickly pear alone. In fact in feeding a ration of 100 pounds of this feed per day the animals obtained from the feed over 8 gallons of water, which is more than was usually drunk by them when fed cured fodders alone.

It is stated that animals scour badly when fed prickly pear alone; besides, other feeds are needed to supply the proper amount of proteids; and for these reasons it is better not to feed it alone. A ration for a

1,000-pound milch cow of 50 pounds of prickly pear, 10 pounds of wheat bran, and 10 pounds of alfalfa, would appear to furnish about the correct theoretical amount of nutrients, in which the ratio to proteids in carbohydrates would be 1 to 5.46.

The amount of cheese imported into the United States is increasing rapidly. During the six years from 1900 to 1905, inclusive, the value of the imports increased from £389,207 to £775,032. Italy and Switzerland supplied the bulk of this cheese, most of the remainder coming from France and Holland. Attempts have long been made in the United States to imitate some of the European varieties, and in some instances the results have been decidedly successful, but information concerning the manufacture and composition of the numerous varieties of cheese is not very accessible to English readers, and the apparent need of some work of reference, in connection at least with the importation and home production of cheese has, therefore, led to the preparation of the descriptive notes and the compilation of the analytical data contained in a recently issued bulletin of the U.S. Bureau of Animal Industry (No. 105).

The descriptions are, for the most part, based upon data contained in treatises on dairying and in articles in foreign periodicals. While in many instances they are acknowledged to be very incomplete and possibly at times inaccurate, they nevertheless contain in condensed form practically all the important information that it has been possible to secure in an extended search through the literature relating in any way to the subject. Owing to the large number of publications consulted, it has seemed impracticable to give reference to the descriptive matter.

Although the United States is by far the greatest cotton-producing country in the world, a large quantity of this staple is imported from Egypt. In 1907 the value of direct imports from Egypt amounted to over £3,200,000. In view of the considerable value of these imports, the U.S. Department of Agriculture is endeavouring to develop Egyptian cotton culture in the United States in order to supply their own market with a home-grown product; and a bulletin issued by the Bureau of Plant Industry of the Department gives particulars of the experiments which have been made in previous years for this purpose and discussing the possibility of successfully establishing the cultivation of Egyptian cotton upon a commercial scale in America. The Colorado River region in Southern Arizona and Eastern California, which is the part of the United States that most nearly resembles Egypt in its long, hot, nearly rainless summers and its agriculture under irrigation, appears to be well adapted to Egyptian varieties of cotton. The acclimatisation of agricultural selection will be necessary, however. The types selected so far have been

the Mit Afifi and Jannovitch. The first has fibre about $1\frac{1}{2}$ inches in length, crinkly but fine, and of a pronounced brown colour. The second, which more nearly resembles Sea Island varieties, approaches $1\frac{5}{8}$ inches in length of its fibre, which is silky, lustrous and of a very light cream colour. A number of well executed plates add further value and interest to the bulletin.

"The Nectaries of Cotton" is a title of a valuable little bulletin prepared by Mr. Frederick J. Tyler, the assistant in the fibre plant investigations of the U.S. Bureau of Plant Industry. Mr. Tyler points out that some natural method of grouping the species of cotton is greatly needed, for the cultivated species especially have been confused since the time of Linnæus, and the genus is generally considered very difficult. He considers that the interesting diversity which has been noticed between the nectaries of different cottons will form diagnostic characters of considerable value, as these do not change materially through years and even centuries of cultivation, and are not affected by the economic evolution of the plant. After describing the floral and extra floral nectaries, he proceeds to enumerate the groups of species having similar nectaries, making in all five groups. The rest of the bulletin is occupied with descriptions of the nectaries of each species.

Bee-keeping bulks largely in the August issue of the *Cape Agricultural Journal*. The continuation of Mr. H. L. Attridge's article on "S.A. Bee-keeping" deals with the making and laying of hives and that of the handling of the swarms: whilst an article by the Eastern Province Entomologist, Mr. C. W. Malley, describes bee pirates and suggests remedies for their control. Among other articles in the *Journal* is an interesting paper on the destruction of mountain vegetation and its affects upon the agricultural conditions in the valleys, by Mr. F. E. Kanthack, the Cape Director of Irrigation: and an article by Mr. Chas. P. Lounsbury, the Government Entomologist, on the woolly aphis, with notes on tobacco extract and other remedies.

When the corners of the mouth or nose of the sheep are drawn up, giving an appearance of great misery, that sheep is in a bad way, and should be taken up without delay and duly cared for. Generally a dose of salts or oil, with tonic mixture after it, will right the trouble.

Gardening Notes for October.

By W. J. BELL, Nurseryman, Florist and Seedsman, Maritzburg.

KITCHEN GARDEN.

MAKE full sowings of all kinds of vegetable seeds—Dwarf Beans, Radish, Lettuce, Carrot, Beet, Onion, Tomato, Marrow, Pumpkin and Squash, Egg-plant, Capsicum, Spinach, Leek, Mustard and Cress, Parsley, etc.

Where Celery is required, this should be sown before the end of the month. Some care is necessary in raising this crop from seed, and the most sheltered position in the garden should be selected for the seed bed or boxes—open to the morning sun, with protection from the north, but quite clear of overhanging tree branches. Stiff soil must be lightened by the application of sand and ashes and a surface formed that will not easily harden after being watered.

Sow the seed thinly and evenly on the surface, and after lightly raking it over cover the bed with litter of some kind. Straw is the best, but hay or grass will serve the purpose. The advantage of straw is, that there are no weed seeds with it which are very troublesome amongst Celery seedlings. If a sheltered position in the open is not available in the garden, sow in boxes on the south side of a building or high wall. To ensure a crop it is a good plan to sow in boxes, as well as in the open, as open ground sowings will often fail in spite of every care.

In dry weather watering will be necessary both morning and evening.

Young Onion sets should be planted out this month from the autumn sowings.

Plant out Tomato, Marrow, Cucumber and Cabbage plants. The tall growing varieties of Tomatoes should be staked and should not be allowed to trail on the ground. A mulch of half decayed stable manure round young plants will assist the growth in dry weather by conserving the moisture about the roots and less watering will be required. If grub is troublesome sprinkle a little lime dust round the stems, after forking a little in with a hand fork and replace the mulch.

Keep down weeds between the rows of growing crops and the surface continually loosened with the hoe. This is especially necessary where the ground is heavy and liable to harden after rain. The most useful implement for this purpose is a three-pronged fork which has the prongs set at right angles to the handle and which can be used like a hoe.

FLOWER GARDEN.

Sow all kinds of tender flower seeds, also the half-hardy varieties as recommended for last month.

Hardy varieties may still be sown in the colder parts of the Colony, and most should be in bloom before Christmas. The following are varieties well worth cultivation but which are seldom seen in the gardens of amateurs, and are easily raised from seed.

Calandrinia.—This beautiful Annual is easy to grow from seed, the flower resembling the *Portulaca* but grows about a foot high above the foliage; colour, mauve pink.

Centaurea Americana.—Large thistle-shaped flowers, long petals of rosy lilac shade; grows to a height of about 3 feet; splendid for cutting.

Datura.—Large trumpet-shaped flowers, sweetly scented; colours, yellow, purple, and white.

Acroliniums, *Globe Amaranthus* and *Helichrysum*.—Three beautiful varieties of everlastings, very effective when grown in masses.

Platycodon Grandiflorum Mariesi (Chinese Bellflower).—A compact-growing plant and one that flowers freely in a small state; large-sized flowers which, previous to opening fully, somewhat resemble an air balloon, and on that account is often called "Balloon plant." The colour of the flower is a pretty shade of blue. This is also a white variety. It forms fleshy, tuberous roots, and care is necessary, when digging near, not to break them, as they are extremely brittle. It prefers an open situation, and rich, sandy soil. Where flower seeds are being sown in borders, the best plan is to take out a spadeful or so of soil and replace with a compost of old decayed manure (sifted through a coarse sieve), sharp sand and leaf mould. Make a fine surface, on which sow the seeds thinly and evenly and cover slightly (more or less according to the size of the seeds) with a little of same compost, shade with some kind of litter and give a good watering through a fine rose water can. As soon as the seedlings show through, the shading must be thinned and gradually removed as required.

Plant out in suitable weather all kinds of herbaceous and perennial border plants such as Cannas, Perennial Phlox, Pentstemons, Verbenas, Dahlias, Geraniums, Achilleas, Japanese Anemones, Carnations, Heliotropes, Daphnes, Salvias, Swainsonias, Vincas, and Bulbous plants, including Lilies, Amaryllis, Tuberose, Gladiolas, etc.

Young seedlings of Gloxina, Gerneria, double Petunia, Tuberous Begonia, etc., should be pricked out from the seed pans as soon as they can be safely handled. If sown too thickly to take out singly, lift in small clumps with a pointed stick and plant an inch or so apart into boxes or tins of fine, sandy soil and leaf mould (well drained), then as soon as the young plants are stronger they may be further divided and pricked out singly. Water carefully with a very fine rose and cover with a square of glass for a few days in a sheltered position.

Musk may be treated in the same way.

As soon as rains commence Japan Privet, Thuja and other ever-

green fence plants should be put in, also all kinds of evergreen trees and shrubs, such as Pines, Cypressus, Cedars, Gums, Grevilleas, Pepper Trees, Camellias, Magnolias, Azaleas, Jacarandus, Camphor trees, Eugenias, Rhododendrons, Laurels, Sweet Bays, Oleanders, Gardenias, etc., and evergreen fruit trees, including Oranges, Naartjes, Lemons, Loquats, Guavas, Mangoes, Avocado Pears, etc.

Any deciduous trees or shrubs established in tins may still be planted, taking care not to disturb the soil around the roots, such as Calatpas, Maidenhair Trees, Tulip Trees, Paulonias, Judas Trees, Carob Trees, Walnuts, Spanish Chestnuts, Cherries, Persimmons, also double flowering Peach, crimson, white, and pink. These for the shrubbery are exceedingly showy and ornamental, being, of course, grown for the flowers only.

Correspondence.

A CURIOUS CASE.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

DEAR SIR—The following may interest your readers, though the proverbial extra pinch of salt may be necessary to make it go down. However, I can vouch for the fact.

Mr. J. C. Boshoff of this district, had a heifer, with her first calf last season, which became very thin, and made no satisfactory response to his careful attention and feeding. She was turned out of the shed one day quite recently, as usual, and, after walking about 100 yards, lay down, and when approached was found to be dead.

The *post-mortem* examination revealed the heart in apparently a diseased state; on being cut into a piece of No. 12 black wire was found completely embedded in the heart. The wire is in a very rust eaten condition, showing it must have been in the animal's system for a considerable length of time. It must have been taken into the stomach while eating refuse forage left about where baling operations had been conducted and the surplus ends of bale fastenings carelessly clipped off and allowed to mix with the forage refuse.

That the beast did not die sooner may be due to the slow process of penetration.—Yours, etc.,

"MOOI RIVER."

Mooi River.

POINTS FOR DISCUSSION.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

DEAR SIR,—I shall deem it a favour if you will kindly give the undermentioned points an opportunity for discussion by inserting this in your next issue:—

(a) Is a merino ram fit to breed from;

(b) Is a merino ram fit to exhibit at a show;

(c) Would the judges be justified in disqualifying a merino ram because the latter had black spots on his face and tongue?

These points have been the subject of considerable discussion between myself and several neighbouring farmers, and I am anxious to obtain some authoritative statement upon the matter.

Thanking you in anticipation and apologising for trespassing upon your kindness,—I have, etc.,

L. ROBINSON.

Bont Rand P.O., Ibisi,

East Griqualand.

WIREWORM AND BLUESTONE.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR—In the *Cape Agricultural Journal* for August there is a letter from a Mr. A. Welch, of Beaufort, Cape Colony, referring to another letter in the June issue from Mr. G. W. Brown in which the writer complains of the loss of a number of sheep through being dosed with bluestone. Mr. Welch, too, speaks of the frequency with which bluestone poisoning occurs when dosing sheep for wireworm. I have had the same experience on my farm, and doubtless many other farmers in the Colony can testify also to the dangers which attend the use of bluestone.

Mr. Welch speaks of the cure for wireworm known as "Bert Bowker's Cure." He states that in 1907 he lost hundreds of sheep from wireworm, notwithstanding the fact that as soon as he found his sheep were affected with wireworm, he started dosing with bluestone. With the above-mentioned cure, however, he has now practically eradicated wireworm.

My experience has been practically the same. A year ago I had wireworm badly in my sheep; bluestone I found was apparently undermining the constitution of my sheep; and I was forced to cast around for some other remedy. I tried "Bert Bowker's Cure," and have, I think, completely eradicated the disease, and, besides, improved the condition of my sheep.

I mention these facts because I believe there are numbers of farmers who have found bluestone unsatisfactory and would probably be glad to know of some other remedy which is worth while giving a trial.—I am, yours, etc.,

"YOUNG COLONIST."

Agricultural Conditions in August.

THE WEATHER, CROPS, AND LIVE STOCK.

COMPARED with August of last year the rainfall conditions during last month were very good; and spring has this year more early heralded its coming. Last year the rainfall in most parts of the Colony during August was practically *nil* but this year the reports which we have received in respect of the corresponding month show on the whole a sufficient fall. Similarly no heavy frosts appear to have occurred during the month, whilst last year several heavy frosts did considerable injury. This year during August the frosts have been very slight indeed. At Nel's Rust severe damage was done to fruit trees by winds on 30th August.

As a result of the early rains everything is beginning to look fresh, and ploughing is commencing in many districts. Potatoes are being planted, and, in some districts, mealies and other cereals. The farmers in the Wartburg and adjoining districts, a correspondent states, are busy shelling their mealies, and lots are being sold now. Many people, however, are holding part of the crop for better prices. Our Nqutu correspondent reports that the native crops in his Division have turned out very badly and consequently Natives are paying as much as 20s. per muid cash for this grain. From Melmoth comes a similar report. In that district mealies are selling at from 20s. to 25s. per bag, and, our Melmoth correspondent says, will before long be up to 30s. Whilst forage in several districts is doing well, in others it is very light. Reports received relative to wattle bark are for the most part "good" and "excellent." Fruit again this year promises well, but there is always the hailstorm factor to be considered and a good set the beginning of the season is often followed by a poor crop.

The prices of eggs have, of course, been low in nearly every part of the Colony, and those of milk and butter appear on the whole to have been normal.

One of the great and most important questions connected with poultry-keeping is the vermin question. These little pests swarm in some of the fowl-houses, and play sad havoc with birds of all kinds and all ages—the weakest going first to the wall in the natural course of events.

The Markets.

SOUTH AFRICAN AND OVERSEA NOTES AND PRICES.

THE prices of live stock and animal and vegetable produce, realised on the principal South African markets during the month of August-September, averaged as under.

NATAL.

PIETERMARITZBURG.

The Market Master reports the following average prices realised on the Maritzburg market during the month ended 15th September:—

Live Stock.—Fowls, 1s 9d; ducks, 2s; turkeys: cocks 10s, hens 5s; guinea fowls, 2s 3d; rabbits, 1s 6d.

Animal Produce.—Bacon, 5d per lb; ham, 7d per lb; pork, 4d per lb; brawn, 4d per lb; lard, 7d per lb; meat (other than pork), 4d per lb; butter, 1s 7d per lb; cheese, 8d per lb; eggs, 8d per dozen; hides, 6½d per lb; honey, 6d per lb.

Vegetable Produce.—Barley (grain), 9s per 100 lbs; beans, 11s per 100 lbs; buckwheat, 12s per 100 lbs; earth nuts, 9s per muid; barley, £2 5s per ton; oats (green), £1 10s per ton; oats (forage), £3 10s per ton; oats (grain), 7s 6d per 100 lbs; hay, £2 10s per ton; Kafir corn, 7s 6d per 100 lbs; lucerne (dry, baled), £5 per ton; mealies, 5s 6d per 100 lbs; Japanese millet, 5s per 100 lbs; peas, 10s per 100 lbs; potatoes, 12s per 100 lbs; pumpkins, 4s 6d per dozen; sunflower seeds, 10s per 100 lbs; sweet potatoes, 3s 6d per muid; tobacco (cut), 4d per lb; wattle bark, £4 15s per ton; bananas, 1s 6d per 100; oranges, 2s per 100; naartjes, 2s per 100.

DURBAN.

The Market Master has supplied the following average prices realised on the Durban market during the month ended 17th September:—

Live Stock and Animal Produce.—Goats (Kafir), 12s; pigs, 10s; fowls, 1s 3d; ducks, 2s 2d; turkeys, 4s 9d; guinea fowls, 3s; rabbits, 8s; bacon, 6d per lb; eggs, 10d per dozen; pork, 4½d per lb; butter, 1s 5d per lb.

Vegetable Produce.—Beans, 18s per muid; earth nuts, 9s 6d per muid; mealies, 11s per muid; onions, 1½d per lb; potatoes, 16s per muid; sweet potatoes, 10s per muid; mandarines, 2s 9d per 100; naartjes, 2s per 100; bananas, 10d per 100; oranges, 2s 6d per 100.

CAPE COLONY.

KIMBERLEY.

Messrs. Jas. Lawrence & Co., Ltd., P.O. Box 301, report as follows relative to the Kimberley market:—

Live Stock.—Oxen (good) prime, 600 lbs upwards, £7 10s to £10 10s; cows (good) 450 lbs upwards, £5 to £8; calves, 4d per lb dead weight; pigs, 100 lbs (clean), 2½d to 3d per lb live weight; lambs, 30 lbs, 8s to 10s; lamels, 40 lbs to 45 lbs, 10s to 13s 6d; Cape sheep (good), 10s to 13s 6d; kapaters (good), 10s to 13s 6d; oxen, trek, £6 to £7; riding horses, £10 to £25; draught horses, £10 to £22; mares, £9 to £20; ducks, 2s 3d to 3s; fowls, 1s 9d to 2s 3d; turkeys, 4s 6d to 7s 6d.

Animal Produce.—Butter, per lb: fresh 1s 5d to 1s 6d, second quality 1s 2d to 1s 3d; eggs, 7d to 8d per dozen.

Vegetable Produce.—Bran, 7s 6d to 8s per bag 100 lbs; barley, 7s 6d to 12s per bag; beans, sugar, 30s to 35s per bag 203 lbs; beans, Kafir, 30s to 35s per bag 203 lbs; chaff, 4s 6d to 9s 6d per bale; forage, per 100 lbs: good 4s 6d to 5s 3d, inferior 3s to 4s; Kafir corn: S. African mixed 11s 6d to 12s, white 11s 6d to 12s 6d; Boer meal: unsifted 23s 6d to 26s 6d, sifted 26s to 29s; flour (South African), 15s 6d to 16s 6d per bag 100 lbs; mealies, per 203 lbs: yellow 10s 9d to 11s 6d, white 10s 9d to 11s 6d; white mealie meal, 11s 9d to 12s 3d per 183 lbs; oats, 9s 6d to 11s per bag 150 lbs; lucerne hay, 5s to 6s per 100 lbs; onions, 21s to 22s 6d per bag 120 lbs; potatoes, 17s 6d to 23s per bag 163 lbs; wheat, 19s to 21s per bag; dried peaches, 2d to 4d per lb; dried apricots, 2d to 4d per lb; oranges, 6s to 9s per 100; lemons, 1s 6d to 2s 6d per 100; naartjes, 2s to 5s 6d per 100.

ORANGE RIVER COLONY.

BLOEMFONTEIN.

The following prices were, according to the *Post* realised on the Bloemfontein market on the 12th September:—

Live Stock and Animal Produce.—Fowls, 1s 6d to 2s; dressed fowls, 1s 9d to 2s 6d; ducks, 1s 6d to 2s 3d; geese, 4s to 4s 6d; turkeys, 5s to 7s; dressed turkeys, 6s to 6s 6d; eggs, 7d to 9d per dozen; butter, 1s 3d to 2s 6d per lb; mutton: per hind quarter 3s 6d to 5s, per fore quarter 2s to 3s; pork, 4d to 6d per lb; beef, 4d to 6d per lb.

Vegetable Produce.—Oat hay, 3s 6d to 5s 3d per 100 lbs; chaff, 3s to 4s per bale; Kafir corn chaff, 2s 9d to 3s per bale; Kafir corn, 10s 6d to 12s per bag; mealies, 10s 6d to 13s per bag; barley, 6s 6d per bag; bran, 6s to 7s per bag; seed oats, 15s to 20s per bag; naartjes, 4s to 6s per 100; oranges, 3s 6d to 5s 6d per 100; pineapples, 1s 6d to 2s 6d per dozen.

 TRANSVAAL.

JOHANNESBURG.

Mr. Alfred Webb, produce agent to the Cape Government, P.O. Box 2342, reports as follows for the week ended 17th September:—

Live Stock.—Enquiries are only for *prime* quality, and there is no market for medium or poor stock. Fat slaughter bullocks are in request and prices for this quality remain firm. In the poultry department fowls and ducks are in great request. Prices:—Boer goats, 14s to 20s; donkeys, £5 10s to £6 10s; oxen (slaughter), £9 to £14; oxen, dressed, £1 10s to £1 16s per 100 lbs; pigs (live), 2½d to 3½d per lb; sheep (hamels), 12s to 24s; sheep, dressed, 4½d to 5½d per lb; ducks, 2s 6d to 3s 6d; fowls, 1s 8d to 3s 8d; turkeys: cocks 5s to 10s 3d, hens 4s 3d to 7s.

Animal Produce.—Eggs continue cheap and butter still very scarce. Price:—Eggs: new laid 1s 3d to 1s 6d, fresh 7½d to 10d.

Vegetable Produce.—Bran, 7s 1d to 7s 3d per 100 lbs; beans (dry), 15s 9d to 28s 6d per 200 lbs; Boer meal, 19s to 24s 6d per 200 lbs; chaff, 2s 3d to 3s 3d per 100 lbs; fowls, 1s 8d to 3s 8d; Kafir corn, 11s 6d to 12s 6d per 200 lbs; manna, 4s per 100 lbs; mealies: white 10s 5d to 11s, yellow, 11s to 11s 6d; oats (seed), 7s 10d to 13s per 150 lbs; onions, 17s 6d to 22s per 120 lbs; peas (dry), 14s 6d per 200 lbs; potatoes, per 150 lbs: best £1 2s 6d to £1 13s 3d, medium 14s 3d to 18s; sweet potatoes, 11s 3d to 11s 9d per 120 lbs; rye, 11s 10d to 12s 9d per 200 lbs; wheat, 19s per 200 lbs.

 CAPE COLONY.

The following information has been compiled from the latest available report of the Cape Superintendent of Agricultural Co-operation— for the week ended 12th September:—

Australian wheat has been firmer during the week, partly because of freight accommodation being bought up by wool shippers for London markets. To-day's price is 179s per 2,240 lbs, c.i.f., September-October shipment.

The stocks of Colonial wheat now held are small, and country dealers are still holding out for better prices, and consequently sales have been limited.

Barley and rye have been in demand, but sellers' prices are above buyers' limits.

Bran and Kafir corn remain unchanged.

Natal maize has been firm owing to European demand, and price, c.i.f., Capetown, has been firmer. No business can be done with Transvaal and Orange River Colony owing to high prices.

The following prices are quoted in respect of the week under review:

Vegetable Produce.

Colonial wheat, per 200 lbs.—Caledon, 19s 9d to 20s; Malmesbury, 20s to 20s 3d; Moorreesburg, 20s to 20s 3d; Porterville-road, 20s 6d to 20s 9d.

Colonial oats, per 150 lbs.—Caledon, 7s to 7s 3d; Moorreesburg, 7s 3d to 7s 6d; Malmesbury, 7s 6d to 7s 9d; Main Line, 7s 9d to 8s.

Colonial barley, per 150 lbs.—Moorreesburg, 9s 6d to 9s 9d; Main Line 9s 9d to 10s; Caledon, 9s to 9s 6d.

Bran, per 100 lbs.—6s to 6s 1½d.

Colonial rye, per 200 lbs.—13s 9d to 14s, country stations.

Kafir corn, per 200 lbs.—16s 9d to 17s, delivered buyer's store.

Mealies, per 200 lbs.—*Ex* stores, Capetown, Natal yellows, 14s 3d to 14s 6d; O.R.C. small yellows, 14s 6d to 14s 9d; Natal white coasts, 13s 3d to 13s 6d.

Colonial lucerne hay.—5s to 5s 3d, delivered, Capetown.

Colonial oathay.—Main Line Stations, 2s 9d to 2s 10d; Malmesbury, 2s 8d to 2s 9d; Moorreesburg, 2s 8d to 2s 9d.

Colonial fodder.—4s 3d to 4s 6d, *ex* stores, Capetown.

Colonial compressed chaff.—1s 7d to 1s 8d, Main Line Stations; 1s 6d to 1s 7d, Moorreesburg and Malmesbury.

Vegetables.—Potatoes: new season's, 16s to 21s 6d, 1st quality, 16s to 19s, 2nd 13s to 14s 6d; sweet potatoes, 4s 6d to 8s 6d per bag; onions: 1st quality 15s to 17s, 2nd 10s to 13s 6d (market firmer); green peas (fresh), 7s to 9s 6d per bag; beans (Natal and sugar), 28s to 37s 6d. Potatoes are very scarce, and market will be firmer for coming three weeks. The market for onions is likely to pick up.

Fruit.—Limes, per 100: medium 8d to 1s 6d large 1s 6d to 3s; bananas, 12s to 16s, choicest 18s to 20s; pineapples, 3s to 3s 6d per dozen; oranges (Cape): 1st 4s to 7s 6d per extra fine, 2nd 2s to 3s 6d, 3rd 1s 4d to 2s—supplies good; naartjes, 1st 4s to 6s, 2nd 2s 6d to 3s, 3rd 9d to 1s 9d; dried apricots, 6d to 7d per lb.

Live Stock and Animal Produce.

Poultry.—Fowls: small 11d to 1s 5d, medium 1s 6d to 2s 3d large 2s 4d to 3s 3d; ducks, 2s 9d to 3s 6d; turkeys: hens 4s to 6s 6d cocks 5s to 10s 6d; geese, 3s to 3s 8d; eggs, per 100: new laid 7s to 8s, not guaranteed 6s 6d to 7s.

OVERSEA MAIZE MARKET.

THE slackness in the oversea maize market which was noticeable at the end of July continued well into the first week in August, the increased shipments to Europe and poor demand causing prices to give way further to the extent of 3d. to 6d. per quarter; 26s. 10½d. was accepted for La Plata steamer just shipped: and 26s. 3d. was asked for August-September

shipments. New crop Roumanian for November-December shipment, too, was offering at 26s. The week's shipment from Argentina were rather large, namely, 271,000 quarters for Europe, of which 200,000 quarters were consigned to the United Kingdom.

During the second week in August shipments to Europe continued to be fairly liberal, but in spite of this the demand for maize improved decidedly and cargoes offered or for shipment were worth 6d. more per quarter than during the previous week. In the London parcels trade there was also much activity, and 26s. 6d. c.i.f. was accepted for parcels near at hand. For the rest of the month shipment were on a smaller scale, amounting to between 230,000 to 240,000 quarters. During the week ended 21st August yellow La Plata afloat sold at 27s. 6d., and August-September at 26s. 4½d. to 26s. 6d., whilst for Odessa shipping up to 28s. 4d. was paid.

The crop reports from Russia and Roumania remain extremely favourable, but concerning the American crops the reports are by no means brilliant. Regarding the present somewhat high prices of maize Beer-bohm's *Corn Trade List* of the 14th August remarks: "The present relatively high price of maize, and its continued firmness may be said to be due in the first place to the exhausted condition of stocks, both in this country and on the Continent, the inevitable result of insufficient shipments for many months past; and in the second place to our almost entire dependency upon Argentina for supplies." The *List* also remarks that it is many years since the season's supplies were so small as they are this year, this being largely owing to the failure of America to export freely.

The general statistical position of maize on the 28th August was as follows:—

	1907-8—qrs.	1906-7—qrs.	1905-6—qrs.
On passage to U.K.	680,000	835,000	1,110,000
„ „ Cont.	570,000	740,000	1,030,000
<hr/>			
Imports into U.K. for the 34 weeks ending August 22	5,005,900	8,012,800	7,083,900
<hr/>			
Visible supply in U.S. (<i>Bradstreet's</i>)	464,800	1,026,300	627,900
<hr/>			
American crop	295,000,000	340,000,000	316,000,000
<hr/>			
	1908.	1907.	1906.
New York, Spot	Nom	67c	57½c
Mark Lane, Odessa landed	28 3	25 3	—

SHIPMENTS OF MAIZE TO EUROPE FROM JANUARY 1ST TO DATE.

	1908. U.K *	1908. Cont.	1907. U.K.*	1907. Cont.	1906. U.K.*	1906. Cont.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.
America	1,128,000	1,339,000	3,095,000	3,730,000	3,319,000	5,335,000
Argentine	2,776,000	2,256,000	2,305,000	1,300,000	3,786,000	3,058,000
Russia	511,000	775,000	1,210,000	1,815,000	160,000	226,000
Danube, etc. ...	1,135,000	1,880,000	1,785,000	3,360,000	365,000	1,055,000
Total	5,050,000	6,250,000	8,125,000	10,205,000	7,630,000	9,675,000

* Includes shipments for orders.

MISCELLANEOUS COMMODITIES.

We are indebted to Messrs. S. Figgis & Co.'s *Monthly Price Current* of East India, Cape of Good Hope, China and Singapore produce, of the 20th August for the following notes for such commodities as are likely to interest readers of this *Journal*.

The prices of various commodities have so far, during 1908, run as follows:—

Aloes (Cape).—Fair dry to fine bright, 28s to 30s; common and middling, 23s to 27s.

Arrowroot (Natal).—Middling to fine, 5d to 7d.

Bees' Wax (South African).—Fair to fine yellow, £7 5s to £7 15s.

Castor Oil (East India).—Firsts, white, 4d to 4½d; seconds, fair and good pale, 3½d to 4d.

Chillies.—Zanzibar, fair to good bright, 20s to 25s; Mombasa, fair, 23s to 26s; Nyassa, fair to good bright, 25s to 55s.

Cinnamon (East India).—Firsts and seconds, ordinary to fine pale quill, 7½d to 1s 7d; thirds and fourths, ordinary to fine pale quill, 6d to 1s 3d; chips, fair to fine plant, 2½d to 3d.

Ginger (Cochin).—Cut, good to fine bold, 70s to 80s; cut, small and medium, 40s to 60s; rough, fair to fine bold, 36s to 40s; small and medium, 33s to 36s.

Indigo.—Bengal: middling to fine violet, 3s 4d to 3s 10d; ordinary to middling, 2s 10d to 3s 2d. Kurpah: fair to good reddish violet, 2s to 2s 6d; ordinary and middling, 1s 6d to 1s 10d. Madras (dry leaf): middling to good, 1s 6d to 2s; low to ordinary, 1s 2d to 1s 4d.

Myrabolams.—Bombay: prices range, according to grades, from 3s 6d to 7s. Madras (Upper Godavery): 3s 6d to 5s 6d. Coast: 4s to 4s 6d.

Turmeric.—Bengal: 18s to 23s. Madras: 10s to 23s. Cochin: 10s to 22s.

AUGUST REPORT.

Messrs. Figgis & Co. report as follows on produce from the East and the Cape for the month of August. Business was more active:—

Aloes (Cape).—In slow demand at lower prices. At auction 158 packages offered, 13½ sold—Mossel Bay, hard bright 32s down to 29s, part softish 29s down to 27s, part soft drossy and coarse 27s to 26s, dull drossy 25s 6d to 21s, mixed with sand 1½s 6d. Algoa Bay, soft bright 26s 6d (one lot 32s), soft 25s 6d to 24s.

Bees' Wax.—Zanzibar quiet; 286 packages and 3 sold. Fair red and yellow £6 7s 6d, dark mixed £5 15s. East Indian dull: 50 packages retired Madagasear rather easier; 463 packages offered and 77 sold, good bright £6 15s, fair reddish and dark £6 10s, dark £6 5s to £6 7s 6d.

Camphor.—China advanced, with sales to arrive up to 160s c.i.f. and 165s spot, closing rather lower at 157s 6d c.i.f.

Chillies.—Dearer. Spot Mombasa sold at 24s per cwt., and buyers. To arrive business done at 25s c.i.f. New York. Dull Zanzibar sold on the spot at 22s per cwt.

Ginger.—Remains quiet. Sales on the spot of washed Cochin at 34s 6d per cwt, and further sellers thereat.

Indigo.—At the third quarterly auctions of the year held 13th July, 1,055 chests were offered and 256 sold at steady prices.

Ostrich Feathers.—There was a smaller quantity catalogued for the auctions 27th July, the weight being 84,790 lbs, against 89,160 lbs in June and 68,140 lbs in July last year. There has been a steady trade during the interval, and prices on the average shew some improvement, as anticipated. There was good general competition throughout for all broad wings, Blacks and Floss at better prices, but common wings continue neglected. Whites—Good qualities advanced fully 10 per cent., seconds and good narrow sold steadily. Common lots were again cheap. Femina sold firmly for all useful qualities, while common and undesirable lots barely realised previous low rates. Byocks—Good medium and short sold firmly; other kinds were cheaper. Spadones were in very large supply and declined 10 to 15 per cent. Boos—Large White sold firmly, but other sizes were 10 to 15 per cent. cheaper. Femina and Drab were firm. Blacks—Good long sold firmly, while mixed lots and medium sizes advanced fully 10 per cent. Drab sold firmly. Floss sold at extreme rates and advanced about 15 per cent. 3,959 cases (including 227 cases of Egyptian Feathers, which only partly sold and were cheaper) were catalogued for these auctions and mostly sold. Value about £185,000. Next sales 28th September. Ample arrivals.

Coal and Labour Return.

Return of Coal raised and Labour employed at the Natal Collieries for the month of August, 1908 :—

COLLIERY.	Average Labour Employed.					Output.
	Productive Work.			Unproductive Work.*	Total	
	Above Ground.	Below Ground.	Total.			Tons. Cwt.
Natal Navigation ..	396	665	1,061	11	1,072	23,415 0
Blancsberge ..	326	695	1,021	6	1,027	13,163 3
Durban Navigation ..	217	509	726	26	752	14,883 0
Dundee Coal Co. ..	237	444	711	31	742	13,221 5
South African ..	123	230	403	63	466	11,458 6
Glencoe (Natal) ..	91	430	539	353	933	11,134 0
St. George's ..	294	421	625	..	625	10,231 0
Newcastle ..	93	463	556	..	553	9,553 19
Talana(Natal) ..	110	310	420	7	427	5,764 1
Natal Steam Coal Co. ..	80	195	275	20	295	5,276 15
Ramsay ..	52	235	237	11	293	3,235 11
West Lennoxton ..	73	135	209	..	209	2,855 0
Zululaid ..	25	19	44	..	44	471 8
Hlobane ..	..	..	..	241	241	5 0
Vaubank\$ ..	..	4	4	4	8	4
Totals	2,057	4,865	6,922	773	7,695	132,786 16
Corresponding month, '07	2,249	4,749	6,998	217	7,215	147,884 16

	Productive Work.			Unproductive Work.	Total, August, 1908.	Total, August, 1907.
	Above Ground.	Below Ground.	Total.			
Europeans	177	131	308	55	363	331
Natives	693	3,144	3,842	564	4,406	3,844
Indians	1,182	1,590	2,772	154	2,926	3,040

* Cost charged to Capital Account.

\$ July return.

Mines Department, Maritzburg, September, 1908.

CHAS. J. GRAY,
Commissioner of Mines.**RETURN OF COAL BUNKERED AND EXPORTED.**

Return of Coal bunkered and exported from the Port of Durban for the month of August, 1908 :—

	Bunker Coal	Exported to :—	Tons.	Cwt.
	69,476	5
East London	2,790	16
Algoa Bay	4,126	16
Capetown	9,154	15
Port Nolloth	691	10
Beira	1,432	18
Chinde	389	18
Tanga	45	5
Bombay	2,616	2
Pulo Bukum	4,353	10
			95,077	15

Customs House, Port Natal, 1st September, 1908.

W. L. HOWE,
for Collector of Customs.

Return of Farms at Present under Licence for Lungsickness and Scab.

STOCK INSPECTOR.	DISTRICT.	DISEASE.	OWNER.	FARM.
A. P. Craw ..	Ladysmith ..	Scab	H. N. Nel ..	Catharine
			J. van de Bosch ..	Ruther Glen
			A. J. Good ..	Mattwana's Hoek
			Messrs Grey & Smith ..	Garthmore
			D. Sparks ..	Newlands
			J. H. Newton ..	Arnot Hill
			Chas. Coventry ..	Groot Hoek
			— " Plessis ..	Brakspruit
			I. J. Buys ..	Riet Kuil
A. B. Koe ..	Portion of Estcourt	Lungsickness	Mrs. E. S. Gibson ..	Breezie Braes
		Scab	A. N. Bennett ..	Winterton
			Vondabia ..	Kelvin
			L. S. Kershaw ..	Winterton
A. J. Marshall ..	Dundee ..		Umzagaas ..	Moordspruit
			G. F. Kremer ..	Daloy
R. Landsberg ..	Krantzkop ..	Lungsickness	C. M. Meyer ..	Craighead
			Natives ..	Myoniezwe's Locat'n
			Nyongas ..	My niezwe's Locat'n
A. H. Ball ..	Weenen ..	Scab	J. P. Lotter ..	Berg Vliet
			C. P. F. Lotter ..	Waterfall
			L. J. Van Rooyen ..	Belle Vue
		Lungsickness	Natives ..	Vissgewaagd
J. Stewart ..	Bergville ..	Scab	C. Halferty ..	The Falls
			C. Halferty ..	Zuur Laager
			D. Evans ..	Zuur Laager
D. Williams ..	Utrecht ..		T. L. Botha ..	Weteval
			L. Page ..	Spitzkop
			E. Stoppelberg ..	Krommelenhoog
			Kaalkop ..	Utrecht
			G. J. v. Schalkwijk ..	Weltevrede
			Umxaba ..	Goedehoop
			E. Hattingh ..	Utrecht
			T. Van Rooyen ..	Groot Vlei
			Squata ..	Gum Tree Grove
			Umdie ..	Eenkantlani
H. Van Rooyen ..	Balanango ..		T. Potgieter ..	Protest
			Sebochwana ..	Hailstogd
			NKonyabana ..	Huigoed
			Jakob ..	Langverwacht
			Pasma ..	"
			Daniel ..	Verdubeld
			Nyagesane ..	"
			Jakals ..	Adelaid
			L. Tafel ..	Onverwagde
			Ngetwayo ..	Braadlaagte
			Makhoba ..	Rooipoort
			Mbop ..	Verdrend
J. G. Speirs ..	Impendhle ..		Pindl, Vete & Sobuon ..	Furth
A. Brown ..	Polela & Underberg		Natives ..	Location No. 1.
			J. Cole ..	Springshome
			J. Cole ..	Everfair
			J. Cole ..	Hiabini
L. Trenor ..	Alfred ..	Lungsickness	Hitchins Bros. ..	Thleku
		Scab	Salwana ..	Location
			Yalwaco ..	"
			Dumas ..	Location
		Lungsickness	M'Yango ..	Thluku
			Busak ..	Izingoiweni
			G. Logan ..	Tand No. 12
			J. Manguan ..	Location
			Guhlan ..	"
			Pelusa ..	"
			J. Fynn ..	"
A. S. Parkinson ..	Lions River ..	Scab	M'Nyango ..	Thluku
			A. C. Thomson ..	Lion's Bush
			C. Strapp ..	Outlands
			Wm. Adams ..	Adamshurst
			G. Woodhouse ..	Hallwell
			Mapela ..	Rockwood
			E. A. King ..	Lyndock
R. Mayne ..	Eastern Umvoti ..		L. L. Nel ..	M. resdale
			J. T. Morton ..	Wophadale
			Lukas Kumalo ..	Umvoti Location
			H. G. Plant ..	Oakford

RETURN OF FARMS UNDER LICENCE (Continued.)

STOCK INSPECTOR.	DISTRICT.	DISEASE.	OWNER.	FARM.
C. T. Vaughan ..	Paulpietersburg ..	Scab	P. A. len ..	Welverdiend
			G. v. n. der Venter ..	Bedrog
			J. M. Louvrens ..	Pivaan's Poort
			S. C. van Rooyen ..	Geuk
			G. Combink ..	Geluk
			Mapenini ..	Halberton
			O. Walker ..	Rooipoort
			E. Walker ..	"
			M. Ferreira ..	Juberts Rust
			H. Kloppe ..	Geuk
			G. Van Rooyen ..	H. verton
			Munkana ..	Rekwest
			A. Pretorius ..	"
			D. de Haas ..	Paardifontein
			H. J. Potgieter ..	Lachkrul
			J. H. Laudemann ..	Schikhoek
			A. Herbst ..	"
			J. H. Van Rooyen ..	Paardefontein
			J. J. Griezels ..	"
			J. Potgieter ..	Makateskop
R. Wingfield Stratford	Newcastle ..	Lungsickness	S. W. Reynolds ..	Bank
			Osborne & Vernon ..	Rooipunt
			G. Adendorff ..	M. dder Luagte
J. Button ..	Portion of Estcourt	Scab	D. Van Niekirk ..	De Westroom
			Various ..	Weston Commage
			M. Norton ..	Elandsfontein
A. Hair ..	City and Umgeni ..	Lungsickness	F. H. Lindsay ..	Rosemount
			Mkaban ..	Stangers Hoek
			Isweli ..	"
G. Danie ..	Vryheid ..	Lungsickness	K. J. P. Otto ..	Otto's Bluff
			Kula ..	Zwaartkop Location
			Zie ..	"
			Pagapaga ..	Otto's Bluff
			S. tana ..	Dubbierecht
			H. Liebetran ..	Vrede
			Nxanala ..	Welgevonden
			Mpenzan ..	Vaalkop
			H. Tshipiri ..	Harabetaald
			H. W. Schultz ..	"
			A. Armstrong ..	Lekkewater
			J. A. Viljoen ..	Stillwater
			Lugis ..	Bedrog
			Fayle ..	Schaspkopje
			Mpesnkonie ..	Welgevonden
J. R. Cooper ..	Nkandhla & Nqutu	Lungsickness	Haijwa ..	Wiemansrust
			L. D. Jager ..	Schuilkoek
			Mzipu ..	Berlin
			Leyo & J. Mboye ..	Napaswane
			Mbotshelwa ..	Nsuzi Valley
			B. Bunting ..	Nqudeni
			W. Law ..	"
			P. Titlestadt ..	"
			L. Mlife ..	Nqutu
			P. Mlife ..	Mkoujana
J. F. van Rensburg	Ngotshe ..	Lungsickness	J. Cebukulu ..	Mangeni
			K. Umsinengo ..	Mquzini
			Segudwe ..	Smalldeed
			H. van der Venter ..	Landeman's Drift
			— Van der Venter ..	Landeman's Drift
			C. Vermaak ..	Ontevreden
			M. G. Vermaak ..	Driefontein
			Mhlusha ..	"
			Mph e ..	Weltevreden
			F. W. Birkenstock ..	Beroofd
B. Klusever ..	Port Shepstone ..	Lungsickness	Mrs. C. Wessels ..	Broedons
			M. Swart ..	Langervacht
			Wm. Sayers ..	Port Shepstone

MANGE IN HORSES EXISTS AS UNDER.

Owner.	District.	Owner.	District.
Pinda, Vete & Sobuon ..	Impendhile	Prætorious, H. ..	Upper Umkomanzi

Meteorological Returns.

Meteorological Observations taken at Government Stations for Month of August, 1908.

STATIONS.	TEMPERATURE (IN FAHR. DEGS.).				RAINFALL (IN INCHES).					
	Means for Month.		Maximum for Month.	Minimum for Month.	Total for Month.	No. of Days.	Heav's train-fall in 1 day.		Total for Year from July 1st, 1908.	Total for same per'd. from July 1st, 1907.
	Maximum.	Minimum.					Fall.	Day.		
Observatory ..	74.4	56.2	99.9	47.7	1.80	13	.49	18th	2.20	.17
Stanger ..	77.0	55.3	101	47	1.21	9	.37	17th	1.55	1.07
Verulam ..	78.1	53.2	102	46	1.58	9	.72	11th	1.82	.25
Greytown ..	72.9	41.4	88	32	1.02	9	.30	21st	1.02	.19
Newcastle ..	78.9	45.4	87	36	1.64	7	1.12	21st	1.64	nil.
Krantzkloof ..	72.7	55.7	91	46	1.71	8	.65	12th	1.72	..
Polela (Bulwer) ..	—	—	—	—	1.43	11	.40	17th	1.43	..
Ixopo ..	—	—	—	—	1.06	8	.22	21st	1.06	..
Mid-Illovo ..	74.8	50.0	96	40	1.67	9	.55	17th	1.81	.50
Port Shepstone ..	77.5	49.3	102	43	1.98	5	.84	17th	2.68	.89
Umzinto ..	78.7	49.5	96	47	1.09	6	.32	16th	1.11	..
Richmond ..	73.2	46.1	95	37	2.10	9	.87	17th	2.19	.40
Maritzburg ..	75.3	46.8	95	40	1.02	8	.32	10th	1.04	nil.
Howick ..	72.3	41.6	93	32	1.31	9	.36	11th	1.36	.34
Camperdown ..	77.1	47.4	96	42	1.43	7	.50	17 h	1.43	.12
Dundee ..	71.1	46.9	85	40	1.54	4	1.06	22nd	1.54	nil.
Weenen Gaol ..	81.3	41.6	94	30	.88	8	.33	21st	.90	nil.
Lidgett on ..	72.8	40.2	94	29	1.53	11	.40	10th	1.53	..
Impendhle ..	67.2	38.1	85	31	.94	11	.49	10th	.95	..
New Hanover ..	75.8	43.7	93	35	1.49	8	.40	20th	1.49	.29
Krantzkop ..	75.2	50.4	85	39	.93	7	.50	17th	1.04	..
Charlestown ..	68.5	37.8	79	22	1.83	7	1.06	21st	1.83	nil.
Vryheid ..	77.2	48.2	88	41	2.57	6	1.30	22nd	2.70	nil.
Mtunzini ..	83.4	51.7	99	45	1.23	7	.30	9th	4.06	1.92
Hlabisa ..	81.4	57.2	96	45	1.18	4	.80	21st	1.55	..
Melmoth ..	76.1	51.8	95	44	.98	8	.67	22nd	1.11	.06
Ubonbo ..	75.1	53.1	90	46	2.20	2	2.00	22nd	2.36	.15
Point ..	—	—	—	—	2.01	7	.68	21st	2.48	.32
Mahlabatini ..	80.3	41.4	92	36	.94	3	.80	21st	.98	nil.
Empangeni ..	82.3	52.9	101	44	2.17	4	1.16	18th	3.68	.72
Imbizana ..	—	—	—	—	1.46	8	.57	21st	1.72	..

Meteorological Observations taken at Private Stations for Month of August, 1908.

STATIONS.	TEMPERATURE (IN FAHR. DEGS.)		RAINFALL (IN INCHES).						
	Minimum for Month.	Maximum for Month.	Total for Month.	No. of Days.	Heaviest rain- fall in 1 day.		T. tal for Year from 1st July, 1908.	Total for same period from July 1st, 1907.	
					Fall.	Day.			
Adamshurst	95	38	0.51	5	0.27	10th	0.51	0.07	
Hilton	89	37	1.14	10	0.28	16th	1.12	0.23	
P. M. B., Botanical Gardens ..	—	—	1.22	8	0.32	16th	1.26	—	
P.M.B., Town Bush Valley ..	—	—	1.46	5	0.32	17th	1.51	—	
Mount Edgecombe	—	—	1.62	8	0.68	12th	1.83	0.62	
Cornubia	—	—	3.45	—	—	—	3.61	0.82	
Milkwood Kraal	—	—	0.54	—	—	—	0.59	0.51	
Blackburn	—	—	0.76	—	—	—	0.39	0.85	
Saccharine	—	—	1.50	—	—	—	1.63	0.49	
Equeefa	102	47	1.21	9	0.43	18th	1.38	0.58	
Umzinto, Beneva	—	—	1.01	8	0.32	17th	1.08	0.13	
Umhlangeni	102	58	1.51	9	0.41	21st	1.93	—	
Riet Vlei	—	—	0.29	5	0.16	11th	0.30	—	
Braunholme	—	—	2.41	8	0.91	21st	2.41	0.71	
Cedura—Vlei Station	91	25	0.66	8	0.24	11th	0.66	0.15	
Winkel Spruit.. .. .	1.01	49	1.65	9	0.59	12th	1.68	1.64	
Weenen	91	31	0.34	4	0.37	21st	0.38	—	
Giant's C stle	66.4	40.3	1.88	5	0.57	10th	1.92	0.63	

Pound Notices.

NOTIFICATION is contained in the *Government Gazette* of the sale, unless previously released, of the undermentioned live stock on the dates specified :—

ON THE 7TH OCTOBER.

Boston.—Eighteen mixed native goats, slit in off ear.

Finchley.—(1) White kapaer goat, yellow on neck, left ear swallow tail, and half moon in front. (2) White sow, in young. (3) Small bay gelding, black points, tail cut square, in low condition.

Hatting Spruit.—Two Ango-a ewe goats, both right and left ears snicked, and piece cut out at back of both right ears.

Loteni (Impendhle Division).—Running on the farm "Morvera," Impendhle Division, occupied by J. W. McLean, and reported too weak to be driven to the Pound—(1) Black polled cow, branded B on right thigh, round hole in right ear, with brown bull calf two days old. (2) Red polled cow, white belly, flanks and tail, branded B on left hip, white patch on back, small nick top of each ear.

Meran (Waschbank).—Very dark brown mare, white stockings on off fore and hind legs, and white hoofs, near fore and hind legs and hoofs black, white blaze right down to tip of nose, nearly black scanty mane, and very long tail, uncut, young rough coat, fair condition, over 14 hands near hind quarter old brand, P.S., with indistinct marks above, one like R, off hind quarter, new brand B and smudges of B.

Pine Tree (Alexandra Division).—Black hog pig (impounded by a native and reported by him to have been running at his kraal for two months.)

Solferino (Gourton).—(1) Red cow, with patches of white on belly, swallow tail cut in right ear, with snip cut out of back of right ear, and snip in back of left ear, white on forehead. (2) Red cow, same marks in both ears, with calf at foot. (3) Red cow, branded J.M., with calf at foot. Both cows with same ear marks as above. Impounded by Mr. F. Burnard.

Thornville Junction.—Black she goat, no ear marks nor brand.

Vryheid. Twelve kafir sheep, ewes, black, black-and-white, and brown coloured slit and nick in right ear, no other marks.

Weenen.—(1) Black pig, sow, half grown, long snout (claimed by Mrs. Maboji, who, however, refuses to release it). (2) Black ewe goat, swallow tail each ear.

ON THE 14TH OCTOBER.

Mitunini.—Bay stallion, 12 hands, hind feet white, age two years, probable value, £5 (impounded on the 31st August, 1908, by Natal Police).

ON THE 21ST OCTOBER.

Acton Homes.—(1) Black ewe, with black ram lamb. (2) Black ewe, with black ewe lamb. (3) Bastard Merino hamel. (All have tips of left ear cut off. No brands. Very wild lot.

Dundee.—(1) Merino ewe, indistinct brand right side, slit back right ear, V tip and front right ear, piece out left ear. (2) Merino ewe, branded J.B. left side, piece out back left ear, left ear punched V tip and back right ear. (3) Bay gelding, flea bitten, about 13 2, about five years, star forehead, scar near side nose, hind right fore foot white, branded J.D. off quarter.

Umsinga.—Eight brown and white kafir sheep, no visible marks or brands (impounded by Mr. C. T. Dubois, Vergelegen Farm).

Woodstock.—Bay horse, aged, tip off left ear and half moon in back of same, left hind foot white, hobble marks on both front feet, old sore on back.

POUND CHANGES.

The Pound at Moguntia, Alfred Division, has been abolished.

Mr. Morton Gibbons has been appointed keeper of the Pound at Louwsburg, Ngotshe Division, *vice* Mr. R. Ruben, resigned.

Brands Allotted to Infected Magisterial Divisions.

The following is a list of the brands which have been allotted to the several infected Magisterial Divisions: Durban County, D. 2; Alexandra County, A. 2; Lower Tugela, T. 2; Mapumulo, S. 2; Inanda, B. 2; Umsinga, U. 2; Dundee, X. 2; Vryheid, V. 2; Ngotshe, H. 2; Paulpietersburg, P. 2; Nongoma G. 2; Mahlabatini, L. 2; Ndwedwe, N. 2; Weenen County, W. 2; Umvoti, F. 2; Hlabisa, K. 2; Eshowe, E. 2; Ladysmith, R. 2; Babanango, O. 2; Ladysmith, East of Line outside infected area, R. 3; Utrecht, Z. 2; Krantzkop, 2 K; Umvoti Location, 2 F; Ladysmith, West of main line of Railway, R. 3 on left neck; Pietermaritzburg City, 2 P; Umlazi Location (Upper Umkomanzi portion), 2 U; Umgeni Division, west of line, J. 2; Lions River, east of line, 2. H.

Employment Bureau.

THE Department of Agriculture has received applications from the undermentioned, who are prepared to become assistants or apprentices on farms. The Department will be glad to hear from farmers willing to take young men as assistants, and to place them in correspondence with the various applicants. When communicating on the subject, farmers may refer to the applicants by quoting the numbers in the following list:—

109a.—Scotchman, 39 years of age, producing good references from his previous employers, desires to obtain on a farm light work, such as bookkeeping, superintending and dispatch of produce, &c.

No. 110a.—Englishman, 39 years of age, gardener by profession, with knowledge of farming, desires employment on a farm. Appears to be a steady and reliable man.

No. 111a.—Married man, 36, no children, desires managership of farm. Spent five years with Capt. Hayes, and is well acquainted with the management of horses, including racing horses. States he has sound veterinary knowledge and understands dairy, poultry, pig, and stock farming generally. South African experience, four years Cape Colony and one year Impendable Division, Natal. Is prepared to work for month or two for board and lodging to prove capabilities, provided sound opening at end of that time.

No. 112a.—Young man, single, desires employment on farm. Two years' experience of mixed farming in Underberg and Lions River Divisions. Small salary required, with board and lodging.

No. 113a.—Age 27, desires to obtain a start on a farm in Natal. Came to South Africa six months ago; attended the preliminary classes at the Glasgow and West of Scotland Agricultural College, and has also obtained a certificate for Theoretical Agricultural Chemistry. Is steady, and would be willing to work without any salary in order to obtain a practical knowledge of farming.

No. 114a.—Is anxious to obtain experience in farming, and is willing to work for his board and lodging. Age 23.

Farmers requiring good, steady farm hands would do well to communicate with Ensign Anderson, of the Salvation Army Shelter, Maritzburg, who constantly has good men at the Shelter who would be glad of employment at reasonable rates. Ensign Anderson pledges himself not to recommend for employment any but those he is satisfied will give satisfaction to their employers. He will be pleased to enter into correspondence with any farmer who may address him on the subject.

East Coast Fever Advisory Committees.

(NOTE.—Owing to sparse European population, the following Magisterial Divisions have no Advisory Boards: Ubombo, Mapumulo, Ingwavuma, Mahlabatini, Ndwandwe, Nkandhla and Hlabisa.)

ALEXANDRA.—Chairman: W Thomson, Lower Umkomaas. Members: H Bazley, R C Archibald, A Blamey, H Reynolds, G J Crookes.

ALFRED.—Chairman: Magistrate. Members: A G Prentice, Rev. S Aitcheson, J E Brown, F H Boddy, H M Raw, H Rethman, H C Hitchens, H J R Hatchwell, W P Bouscrie.

BERGVILLE.—Chairman: T E Zunckel, J. P., Bergville. Members: P H Van der Riet, J G Fannin, H Jackson, C Halferty, F Zunckel, Mbulali—Consulting member for natives

BULWER.—Chairman: Magistrate. Members: R Comrie, Wm Colville, R Gordon, H Cole, P Garson, P McKenzie, G. Malcolm, H C Gold, R Justice, E Stafford, W Little.

CAMPERDOWN.—Chairman: A N Kirkman, Cato Ridge. Members: J F Erfmann, P J Knigham, W B Turner, C J A Scheepers, W Mercer, L G Wingfield Stratford, J W Harvey, B B Evans, J W V Montgomery, B R Buchanan, W L Stead. SUB-DIVISIONAL BOARDS.—No. 1. *East of Railway Line from "Spitzkop" to Railway Line.*—Chairman: J F Erfmann, Cato Ridge. Members: P J Knigham, H Dinklemann, F L Meyer, J H Meyer, H A Meyer. No. 2. *East of Railway Line from West of Government Fence.*—Chairman: C J A Scheepers, Thorneybush. Members: W B Turner, W Mills, J F Scheepers, H Nadauld, G S Phipson. No. 3. *West of Railway Line from Koning Krantz to Killarney and along Umlaas River.*—Chairman: A N Kirkman, Clairmont. Members: W Mercer, W Brown, R Godfrey, W S Meyer, E W Meyer. No. 4. *West of Railway Line, rest of Division between Main Line, Umlaas River Boundary of No. 3.*—Chairman: B R Buchanan, Manderston. Members: W Stead, J R Schwegermann, W E Schwegermann, W Middleton, C Galtrey, W S Crouch. No. 5. *West of Main Line, Beaumont, East of Main Mid-Illovo River from Westley's Drift to Umguaranta River.*—Chairman: J W Harvey, Camperdown. Members: L G Wingfield Stratford, R Lyne, O A Hutton, E H Hayes, F E Groom. No. 6. *Mid-Illovo West of Line, rest of Division South of Umlaas River.*—Chairman: B B Evans. Members: J W V Montgomery, J H McCullough, J Ballam, J James, H S Power.

DUNDEE.—Chairman: F. Turton, Glencoe Junction. Members: J Campbell, J J Grove, H Wiltshire, G M De Waal, Aug Jansen, A J Potgieter, A Cronje, A Schuid, H Greenhough. SUB-DIVISIONAL BOARDS.—*Glencoe Sub-area.*—Members: F Turton, H Greenhough, W H Miller, F Schroeder, V Marshall, J J Lausen, J J De Jager, Rev Father Rauch (Native interests). *Hatting Spruit Sub-area.*—Members: J J Grove, H A J Davil, A E Norman, J Campbell, Rev. J Dewar (Native interests). *East of Helpmakaar Road.*—Members: A M Cronji, D C Pieters, P Meyer, J A Naude, A Jansen. *West of Helpmakaar Road.*—Members: A J G Meyer, A P Lund, D C Uys, A J Van Tonder, Jun, A J Potgieter. Members of Joint Committee for *Area West of Helpmakaar*: A J Potgieter, A P Lund. Members of Joint Committee for *Area East of Helpmakaar*: A Jansen, A M Cronji. *Area between Main Vryheid Railway Lines.*—Members: W Craig, H Wiltshire, C M Meyer, Sen, A Spies, Jun, C M De Waal.

DURBAN BOROUGH.—Chairman: E L Acutt, Durban. Members: H R Bousfield, R Benningfield, G Swales, J Haynes, — Arthur.

EMTONJANENI.—Chairman: Magistrate. Members: F W Smith, H J James, F W White, A W Symmonds, R J Ortlepp, D C Uys, L J Van Rooyen.

ESHOWE.—Chairman: A Boast, Magistrate. Members: A Moore, G H Hulett, C F Adams, T Parkins, A T Wantink, F J Dickens, H H Thole.

ESTCOURT.—*Ward 2. East of Main Line.*—Chairman: A Stuart. Members: Magistrate, J Raffe, J W Haw, J G Hatting, A Peniston, A B Haviland, G M Rudolph. *Ward No. 3.* (Boundaries: The Bergville Magisterial Division, Tugela to junction of the two Tugelas; The Winterton Settlement fence to Vaai Plaats fence and Ovington and Sibhamie's Location fence, and from there to Government Game Reserve).—Chairman: H J De Waal, Glenisla. Members: R Gray, M Sandeson, R J Land, A Spearman, H L Bacon. *Ward No. 4* (Estcourt West of Railway Line; follow Bushman's River as far as Mr. Kerr's farm, then Nalaara's Location fence as far as Game Reserve).—Chairman: R H Raffe. Members: F C Schiever, J Rencken, W Couch, P Male, T L Fyvie, J Hatting, A W J Hatting. *Ward No. 5* (Boundaries: Remainder of District West of Line).—Chairman: H Blaker, Estcourt. Members: W Comins, E B Griffin, H A Woodruffe, Col. Crompton, J Russell, A C Robinson, Jun, A E Downing, A D Shaw, J W Bentley.

GREYTOWN.—Chairman : Paul Hansmeyer, Greytown. Members : D Havemann, A Newmarsh, J A Nel, W T Slatter, A T Handley, H S Botha. *Central Board*.—Chairman : P Hansmeyer, Greytown. Members : J A Nel, A Newmarsh, W J S Newmarch, T K Taylor, S W Cadle, R J Van Rooyen, E J Van Rooyen, J G Nel.

INANDA.—Chairman : C R Bishop, J.P., Umgeni. Members : R Harrison, W Sykes, Jun, E Dore, W Campbell, R Armstrong.

KLIP RIVER.—*No. 1* (A line from Elands Laagte along the Matawaans and Jononos Kop to the Berg ; North line, Dundee boundary : all West of Main Line).—Members : C Mitchell Innes, R M Gray, L Meyer, J C Henderson, C Allen. *No. 2* (O.R.C. line and boundary of No. 1). Members : D Bester, A J Marais, W Allison, J Bester, — Brink. *No. 3* (From Klip River Bridge to Sand Spruit, and up Sand Spruit to its source in the Berg).—Members : H A Potgieter, A A Wetherell, B Nel, F Van Rooyen, H Portsmouth. *No. 4* (Rest of Division South and East of Sand Spruit and West of Main Line).—Members : W Leathern, H Illing, J H Newton, E Robinson, G W Willis. *No. 6* (Whole of Division East of Main Line).—Chairman : J G de Waal. Members : R A Smith, H Nicholson, P Cronje, J Farquhar.

KRANTZKOP.—Chairman : L L D Proksch, Krantzkop. Members : L M J Van Rooyen, L M J Van Rooyen, F E Van Rooyen, J H Van Rooyen, J P Zietsman, A Johnson.

IXOPO.—Chairman : Magistrate. Members : Thos Allen, Geo Martin, E Marriott, A Stone, G A Cooper, J.P., Wm Gray, D Campbell, F L Thring, J.P.

LION'S RIVER.—*No. 1* (Southern portion of West of Main Line).—Chairman : U K McKenzie, Lidgerton. Members : R J Spiers, F North, A McLean, J Morphew. *No. 2* Northern portion West of Main Line.—Chairman : G Ross, Nottingham Road. Members : J Clouston, K Soutar, D Connel, D Smythe. *No. 3* (Southern portion East of Main Line).—J W Dicks, "Rosebank," Howick. Members : W M Henderson, — Buchanan, Jos Raw, H J McKenzie. *No. 4* Northern portion East of Main Line).—Chairman : H Burgmann. Members : W Methley, G Hutchinson, J J Morton, B Taylor. (The whole of the members of the Sub-Divisional Boards constitute the Central Board with the Magistrate, Lion's River, as Chairman.)

IMPENDHLE.—Chairman : T Fleming, Boston. Members : J Martens, P J Lourens, T Carter, C W Brooke, J W McLean, H Boike, C C Lewis, W S Alborough, W Harrington, C W Roberts, D Tootell. *Sub-Committee appointed for Northern portion of Division* (added to Lion's River Division).—Chairman : P J Laurens, Inzinga, via Nottingham Road. Members : H Boek, C N Brooke, T Carter, J Martens, J W McLean. *Sub-Committee for Southern portion of Impendhle*.—Chairman : T Fleming, Boston. Members : C C Lewis, W. S. Alborough, W. Harrington, C W Roberts, D Tootell.

LOWER TUGELA.—Members : W H B Addison, A E Jackson, H E Essery, A S L Hulett, J Brown, W O Robbins.

LOWER UMZIMKULU.—Chairman : Col. J F Rethman, North Shepstone. Members : Col. J R Royston, D C Aitken, J.P., C H Mitchell, J.P., G P Beachcroft, Claude Manning, H Albers, N. Harper, J S Clarke, A Borchard, T Stapleton, Col. Bru-de-Wold.

MTUNZINI.—Chairman : Magistrate. Members : F Green, G M J Gielink, G Getkate, W Saville, A H Konigkramer.

NEWCASTLE *No. 1*. (to be known as Charlestown-Ingogo District from main line of Railway where it strikes the Southern line of the farm Cloutant West, thence along Western boundary of said farm, thence along S. W. boundary of Tipperary West, thence Southern boundaries of Hampstead, Dumferline and Roodeport, thence along the Northern side of the Botha's Pass main road to where it joins the O.R.C. Boundary, thence along the boundary of the Colony, thence along the Charlestown Fence to where it joins the Railway line near Mount Prospect Gate, thence along the Railway line to Cloutant West).—Chairman : J Vos, Charlestown P.O. Members : W J Adendorff, A J Johnstone, A Paine, A H Trouw, Angus Wood. *No. 2* (Newcastle district Southern boundary of No. 1 along Railway line from Cloutant West, including portion of Town Lands Newcastle, which by agreement with Government is considered to be West of line, thence along Railway line where it strikes the Southern boundary of the farm Kopjeallen, thence along Southern boundaries of Kopjeallen, The Gardens, and Lincoln to the Ingagane River, thence up the Ingagane up to the farm Falixtowe, along Southern boundaries of Falixtowe, Bulwerfont, Brooklyn, Stonehenge, Tathamscamp, Hanover, Ellendale, Endsel, Bejuisel, Stelazies Kop, Mount Blanc, to O.R.C. border fence, thence along O.R.C. boundary joining Southern boundary of No. 1 at Botha's Pass).—Chairman : S. W. Reynolds. Members : F. A. R. Johnstone, W Moller, J.P., L H S Jones, C Earl, F Meyer, J J Muller, — Van Breda, J Macdonald, J C Adendorff, E Sanders. *No. 3 Dannhauser District* (Bounded by Southern District No. 2 from the Railway line at Kopjeallen to the Berg, thence along O.R.C. border, the boundary between Newcastle and Klip River Divisions, thence along the Railway line to the farm Kopjeallen).—Chairman : W L Oldacre, Dannhauser. Members : Geo Friend, B Harrington, L J Muller, J Ecksteen, E Hodson, W Watson, Ted Twyman, G Langley,

Don Urquhart. *No. 4* (East of Railway Line, along the boundary between Newcastle and Dundee Divisions from the Railway Line near Dannhauser to the Buffalo River, along the Buffalo River to the junction of the Ingagane, thence along the Ingagane to its junction with the Ineander, thence along the Ineander to the fence of the Newcastle Town Lands, known as the Eastern boundary of the Railway Line, thence along the Eastern side of the Railway Line to the Magisterial Division boundary near Dannhauser.—Chairman: T K Boshoff, Dannhauser. Members: J H Potgieter, H Miller, J H van der Westerhuizen, J J Kemp, W Dicks, C Uys. *No. 5* (the strip of land lying between the Railway line and the Buffalo River from the Ingagane and Ineander streams, which form the north-western boundary of No. 4 district). Chairman, E W Noyce, Boscobello P O; members, Geo Matthews, T K Panzera. *Centr. Bd.* Chairman: S W Reynolds, Newcastle; Members: F A R Johnstone, J Vos, Senr., Angus Wood, W Oldacre, W Watson, E W Noyce, F N Panzera, T R Boshoff, J H van der Westhuizen.

NEW HANOVER.—Central Board, Chairman: E Newmarch; Members: W W Bentley, T C Wolhuter, F Reiche, H Schmidt, E Lindhorst, W L'Estrange, A F McKenzie, W Meyer. *New Hanover Sub-Committee*. Chairman: E Newmarch; Members: Jno Moe, W W Bentley, W Ortmann, T C Wolhuter, O J Muirhead. *Dalton Sub-Committee*. Chairman: W L'Estrange; Members: A F McKenzie, R W Smith, G Redinger, H Rosenbrock, J H Gordon, W Meyer. *Schroeders Sub-Committee*. Chairman: F. Reiche; Members: H Schmidt, E Lindhorst, G Moe, P Rodehorst, H T Rohrs, F Gordon, A Meyer, W Fortmann.

NQUTU.—Chairman: A Barklie, Utrecht; Members: H Wilkins, R L Flindt, W A Westbrook, J W F Hall, Dr. Knight.

PAULPIETERSBURG.—Chairman: N J Els, Viljoens Rust; Members: J B Rudolph, G J Combrink, A Schutte, A Bester, P H van Rooyen.

PIETERMARITZBURG.—Chairman: B Swete Kelly, Pietermaritzburg; Members: W S Crart, C A Fawcett, W E Goodwin, E G McAlister, E E Hodgson.

RICHMOND.—Chairman: Magistrate. Members: E E Johnson, J Mapstone, G D Alexander, C P Lewis, C Nicholson, W Comrie, John Marwick, W P Payn, A H Cockburn. *Sub-Division No. 2*.—Chairman:—G. D. Alexander, Nel's Rust. *Sub-Division No. 5*—Chairman:—W. Oldfields Fox Hill.

RIET VLEI DISTRICT.—Chairman: D E Muir, Deepdale. Members: J M Van Rooyen, R J Van Rooyen, E J van Rooyen, H F Varty, Herman Hohls, J Hooper.

SEVEN OAKS DISTRICT.—Chairman: W J S Newmarch, Harden Heights. Members: H M Balding, J.P., J. Crow, J T Martens, H Mayne, S W Cadle.

UMGENI.—Chairman:—A Robinson, P.M.Burg. Members: J P Symons, F F Schroem, P H Campbell, J F Potterill, A Wood, W Oldfield, C L Lund, R W Comins, R H Pepworth, J F M Keytel, F J Smith, W Lyth, B Crompton, J Blackburrow, J Christianson, A J Tyler, A E Bristowe.

UMLAZI.—Chairman: C Henwood, Durban. Members: W Pearcer W Gillett, H Freese, L Jackson, P W Mackenzie.

UMSINGA.—*No. 1 District* (All farms lying West of the Umsinga-Helpmakaar main road.—Chairman: E C Nuss. Members: W W Strydom, J.P., J H Nuss. *No. 2 District*—(All farms East of the Umsinga-Helpmakaar main road—excepting the farms Sutherland, Gordon, Memorial Mission and Pomeroy Town Lands, and Location lying North of the Mazabeko and West of the Buffalo River—Chairman: W H Wholberg, P O Elardskraal. Members: H W Dedekind, J Dedekind. *No. 3 District*—(The remaining portion of the area lying in the Umsinga Division—Chairman: A Muller. Members: M J Matheson, H. Muller. The three Committees to constitute the joint Committee.

VRYHEID.—Chairman: A von Levetzow, Vryheid; Members: P Labuschagne, B E A Rabe, G M van der Westhuizen, J Kruger, J F Potgieter, L M T Nel.

WEENEN.—Chairman: C G Jackson, Weenen; Members: C Harding, J.P., P J van Rooyen, J.P., K Rottcher, S B Buys, J J Vermaak, L C Kinsman, J W A Pole, C F Vermaak, P R Buys, J C's son.

Executives of Farmers' Associations.

ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION.—President: Wm. Thompson. Hon. Vice-Presidents: A. Blamey, E. W. Hawksworth, Thos. Kirkman, H. Bazley, J. L. Knight, R. M. Hon. Secretary and Treasurer: Geo. Lamb. Hon. Auditor: W. B. Bruener. Committee: W. Arnott, H. G. Arbuthnot, R. C. Archibald, R. G. Archibald, J. Bazley, A. Behrmann, W. Cooke, G. J. Crookes, R. Cruickshank, H. D. Hawksworth, H. E. Hawksworth, A. F. W. Hawksworth, R. C. Hawksworth, J. Landers, D. McAndrew, F. Nelson, C. A. Preston, Dr. Rouillard, W. A. Gilbert, Fred Blamey, Rev. B. M. Ford, S. C. Hawksworth, J. C. Landers, S. F. Crookes, J. J. Crookes, R. A. Lindsay, J. A. Cule, F. B. Preston, R. Parkin, H. Reynolds, J. B. Stewart, C. Taylor, H. H. P. Waller, J. Ross, Rev. W. C. Wilcox, Dr. W. P. Tritton.

ALFRED COUNTY FARMERS' ASSOCIATION.—President: A. G. Prentice, J. P. Vice-Presidents: C. Knox, J. P., L. T. Trener, and C. A. Holwell. Hon. Secretary and Treasurer: H. C. Hitchins. Committee: C. M. Etheridge, R. Fann, J. P., V. Hutchins, S. Aitchison, J. P., W. B. Rethman, Dr. Case, J. P., H. Rethman, R. G. Mack, J. Hogg.

BOSTON FARMERS' ASSOCIATION.—President: Thomas Fleming. Vice-President: H. Phipson. Hon. Secretary and Treasurer, W. J. Fly, J. P.

CAMPERDOWN AGRICULTURAL SOCIETY.—President: John Moon, J. P. Vice-Presidents: J. Gavin and John W. Harvey, J. P. Hon. Secretary: W. E. Allsopp.

CAMPERDOWN AND DISTRICT FARMERS' ASSOCIATION.—President: John Moon J. P. Vice-President: F. N. Meyer. Hon. Sec.: J. Baker. Committee: H. Baker, J. Gavin, J. W. Harvey, J. P., W. B. Turner, H. H. Hutton, C. Baker, H. E. Meyer.

DROK VLEI FARMERS' ASSOCIATION.—President:—Capt. Perceval. Vice-President: Alban Hodson. Hon. Secretary and Treasurer: Edward Marriott.

DUNDEE AGRICULTURAL SOCIETY.—President: F. Turton, J. P. Vice-Presidents: The Minister of Agriculture, the Mayor of Dundee, Messrs. A. L. Jansen, H. Wiltshire, and T. P. Smith. Hon. Secretary and Treasurer: J. McKenzie. Committee: D. C. Pieters, D. Macphail, M. Taylor, A. W. Smalhe, W. Craig, C. G. Willon, D. G. Smith, A. G. Gice, W. J. H. Muller, E. G. Wohltz, G. M. de Waal, B. J. Humann, W. H. Doidge, R. Retallack, H. Riley, H. J. Head, A. S. Pieters, R. R. Mortimer, C. Vermaak, A. E. Norman, W. V. Marshall, H. P. Handley, J. Dyson, T. J. Harvey.

DURBAN COUNTY FARMERS' ASSOCIATION.—Patron: J. H. Colenbrander. President: J. McIntosh. Vice-presidents: H. Westermeyer, R. R. McDonald. Committee: F. R. W. Boehmer, G. Compton, H. Freese, W. Freese, W. Gillitt, H. W. Koenigkramer, H. W. Nichols, F. Schaefermann. Hon. Sec. and Treasurer: Frank J. Voek.

EMPANGENI AND DISTRICT SUGAR PLANTERS' CLUB.—President: P. Stott. Secretary and Treasurer: F. Piccione, P. O. Empangeni. Executive: C. B. Addison, G. Higgs, W. Paul, P. Addison, C. Sturroch.

ESHOWE DISTRICT FARMERS' ASSOCIATION.—President: J. R. Pennefather. Vice-President: C. F. Adams. Secretary: T. Parkins. Treasurer: W. T. Brockwell.

GOURTON FARMERS' ASSOCIATION.—President: W. C. Stockil, Esq., J. P. Vice-President: M. Sandison, Esq. Hon. Secretary and Treasurer: Frederick B. Burnard, Esq.

HATTING SPRUIT FARMERS' ASSOCIATION.—President: A. W. Smalhe. Vice-President: Thos. Brookes. Hon. Secretary and Treasurer: R. J. Hearn. Committee: G. Quaddon, N. Gutz, Wm. Craig, W. R. Quesled, W. T. Heslop, Thos. Dewar, A. E. Norman, D. P. Campbell, J. J. Grove, H. J. Hearn, D. W. H. Tandy, J. B. Pendar, J. Campbell, J. Barbour.

HIMEVILLE AGRICULTURAL SOCIETY.—President: Henry C. Gold, Dartford, Underberg. Vice-Presidents: F. E. Peto, G. H. Royston, J. B. Nicholson. Hon. Sec. and Treasurer: G. Paltraman, Watermead, Underberg. Executive Committee: G. Malcolm, W. S. Johnston, P. McKenzie, F. E. Peto, J. S. Gordon. Yard Steward: D. T. Malcolm. Auditors: T. C. Dearlove and F. E. Peto.

HOWICK FARMERS' ASSOCIATION.—Chairman, Thos. Morton; Vice-Chairman, M. A. Sutton; Hon. Secretary and Treasurer, A. Clark.

INGOGO FARMERS ASSOCIATION.—President: Angus Wood, J.P. Vice-Presidents: G. A. Fimstone and J. Browning. Hon. Secretary and Treasurer: C. Watt.

IXOPO AGRICULTURAL SOCIETY.—President: F. L. Thring, J.P. Vice-Presidents: Col. W. Arnott B.M.R., W. K. Anderson, J.P., C. E. Hancock, J.P. Committee: John Anderson, Thos. Allen, J. C. Auld, H. D. Archibald, F. S. Benningfield, S. Boyd, T. L. Clarence, F. E. Foxon, R.M., Wm. Foster, Jas. T. Foster, C. C. Foster, Geo. E. Francis, L. Gray, A. M. Greer, J.P., J. R. Greer, Wm. Gold, H. A. Hill, C. F. Harris, A. E. Keith, R. Kennedy, Geo. Martin, W. Oakes, L. J. Phipps, T. F. Remfry, J. W. Robinson, Jas. Schofield, M.L.A., D. C. Smail, A. Stone, W. B. Way, A. H. Walker, M.L.A. P. D. Webb. Hon. Sec.: G. C. Way. Hon. Ass. Sec.: A. G. Harris. Hon. Treasurer: T. Arnott.

IXOPO FARMERS' ASSOCIATION.—President: A. E. L. Keith, Ixopo. Vice-Presidents: Geo. Martin, Claybrooke, Ixopo; A. Kirkman, Lufafa, Ixopo. Hon. Secretary and Treasurer: Geo. E. Francis, Morningview, Ixopo. Delegates to Farmers' Union: President and James Foster. Committee: F. Remfry, R. Vause, C. E. Hancock, John Anderson, R. Greer, W. Oakes, D. Campbell, G. C. Way, James Foster.

KLIP RIVER AGRICULTURAL SOCIETY.—President: Daniel Bester, Vice-Presidents: Herman Illing, J. G. Bester, Wm. A. Illing. Secretary and Treasurer: Edward V. Bambrick (Box 50, Ladysmith). Executive Committee: A. Brink, J. Farquhar, C.M.G., M.L.A., W. C. Hattingsh, J. G. Hyde, Trev. Hyde, A. L. Horsley, W. Freer, L. A. Leonard, H. Nicholson, H. C. Thornhill, Herman Illing, D. Munger, P. de Waal, J. H. Newton, D. Sparks, J.P., J. T. Francis, A. W. (Gus) Illing, G. Pinkney, W. Cochrane, George L. Coventry, and *ex officio* officers.

KRANTZKOP FARMERS' ASSOCIATION.—President: Capt. M. Landsberg. Vice-President: P. R. Vermaak. Hon. Sec. and Treasurer: Dr. L. L. Proksch. Committee: C. J. van Rooyen (Albany), C. J. van Rooyen (Wouterfontein), Philip Nel, J. A. G. Mare, L. M. G. van Rooyen, J. C. Martens.

LION'S RIVER DIVISION AGRICULTURAL SOCIETY.—President: Graham Hutchinson: Vice-President: H. Nisbet; Executive Committee: H. Nisbet, M. A. Sutton, A. J. Holmes, J. Humphries, Jno. Pole, and W. A. Lawton; Auditor: W. J. R. Harvard; Hon. Sec. and Treasurer: Arthur F. Dicks, P.O. Box 1, Howick.

LITTLE TUGELA FARMERS' ASSOCIATION.—President: F. van de Waal. Vice-President: F. G. King. Secretary and Treasurer: H. L. Frances. Auditor: A. D. Buchanan. Committee: R. P. Summingsgill, F. W. Holmes, J. P. Wepenaar, J. J. Harding, Max Cameron.

LOTENI FARMERS' ASSOCIATION.—President: J. A. Tod. Vice-President: T. Carter. Hon. Secretary: A. Kennedy Stone.

LOWER TUGELA DIVISION ASSOCIATION.—President: W. R. Hindson. Vice-President: A. E. Foss. Hon. Secretary and Treasurer: H. Curtis Smith (Stanger). Committee: A. S. L. Hulett, F. Addison, G. Stewart, T. G. Coenbrander.

LOWER UMZIMKULU AGRICULTURAL ASSOCIATION.—President: D. C. Aiken, J.P. Vice-Presidents: H. Albers and C. H. Mitchell, J.P. Hon. Secretary and Treasurer: W. J. Plows. Committee: C. Manning, J. W. Aiken, W. G. Camp, T. F. Godwin, J. Hutton, H. Norden and A. Borchard. Hon. Secretary, Show Committee: J. W. Aiken. Show Committee: A. E. Collison, A. Borchard, F. Knoop, A. Ringo, H. F. Voigts, J. Hutton, C. Manning, A. J. Lugg and H. Albers. Hon. Auditor: J. W. Aiken.

MID-ILLOVO FARMERS' CLUB.—Chairman: L. G. Wingfield-Stratford, J.P. Vice-Chairman: B. B. Evans. Hon. Secretary: J. W. V. Montgomery. Assistant Hon. Secretary: A. L. Wingfield. Hon. Treasurer: Jos. McCullough.

MOOI RIVER FARMERS' ASSOCIATION.—President: R. Garland; Vice-President: C. B. Lloyd; Hon. Treasurer: H. A. Rohde; Collector: Capt. W. H. Stevenson; Auditor: Claude Scott; Hon. Secretary: H. B. Hall.

MUDEN AGRICULTURAL ASSOCIATION.—President: Thos. Thresh. Vice-Presidents: Wm. Lilje, E. A. Grantham. Secretary and Treasurer: C. A. Selling. Committee: Otto Rottecher, Karl Lilje, Karl Rotter, Herman Schafer, Fritz Forlage, T. Braithwaite, Ernest Rottecher, C. H. Tilbrook, Rev. H. Rottecher (Hon. Life Member).

NEWCASTLE.—President: F. A. R. Johnstone, J.P. Vice-President: C. Earl, J.P., Mayor of Newcastle; Angus Wood, J.P., Ingogo; O. Schwikkard, C.M.G., Newcastle. Secretary: Wm. Beardall. Treasurer: Ed. Nicols. Executive Committee: L. H. S. Jones, E. Phillips, H. C. Caldecott, C. Watson, G. Langley, W. A. Lang, W. J. P. Adendorff, J. E. de Wet, O. Davis, S. W. Revno's, B. Pettigrew, G. W. Thomas, G. H. Bishop, H. R. Muir, M. C. Adendorff, W. Napier, P. Van Breda, Chriss Botha, G. Templer.

NEW HANOVER AGRICULTURAL ASSOCIATION.—President: G. C. Mackenzie. Vice-Presidents: J. C. Watt, J.P., and R. H. Oellermann. Life Member: C. A. S. Yonge, M.L.A. Secretary and Treasurer: W. D. Stewart, New Hanover. Auditor: J. H. F. Hohls. Committee: W. N. Angus, E. Bentley, W. W. Bentley, Edward Boast, E. E. Comins, G. R. Comins, C. Crookes, jun., H. Dunkelmann, J. Duval, W. Fortmann, Dr. C. H. Herbert, J. Hillermann, J. H. F. Hohls, H. Jacobsen, H. A. Light, G. C. Mackenzie, A. F. Mackenzie, jr., T. M. Mackenzie, J. Muirhead, J.P., Oswald Muirhead, G. Moe, J.P., J. Moe, O. Moe, C. Oellermann, F. Oellermann, C. J. Oellermann, W. Ortmann, J. C. Otte, E. Peckham, J.P., J. A. Potterill, S. Peckham, C. M. Scott, Rev. J. Scott, Wm. Schröder, J.P., Owen Solomon, J. H. Smith, Riby Smith, F. Thöle, H. Vorwerk, H. F. Westbrook, W. H. Westbrook, C. Westbrook, T. Wolhute.

NOODSBERG ROAD AGRICULTURAL ASSOCIATION.—President: Fritz Reiche, J.P.; Vice-Presidents: B. Mummbräuer, P. Rodehorst, W. Dralle, W. Wortmann; Committee: W. Bartels, F. Bosse, H. Brammer, A. J. Bruyns, H. Bruyns, Carl Dralle, H. Gebers, W. Gevers, J. H. Holley, W. C. Holley, C. Hillermann, L. Koch, H. Köhler, F. E. Kuhn, M. Maister, L. Meres, A. Meyer, H. Meyer-Estorf, H. W. Meyer, K. A. Meyer, H. Misselhorn, W. Misselhorn, K. Peters, I. Pfotenhaner, G. Rabe, G. Reiche, Joh. Reiche, W. Rencken, H. Rosenrock, H. Schmidt, K. Schmidt, Rev. Jas. Scott, K. Seele, F. J. Smith, J. Thies, W. W. Thöfft, P. Wortmann, A. Wortmann, F. Wortmann, H. Wortmann, Secretary: Paul Vietzen, P.O., Singletree; Hon. Treasurer: E. Beurlen.

NOTTINGHAM ROAD FARMERS' ASSOCIATION.—President: B. Greene. Vice-President: Geo. Ross. Secretary and Treasurer: C. J. King, Nottingham Road. Hon. Auditor: H. Singleton.

PIETERMARITZBURGSCH BOEREN VEREENIGING.—President: D. P. Boshoff; Secretary: E. G. Jansen, 313, Loop Street, Maritzburg.

RICHMOND AGRICULTURAL SOCIETY.—President: John Marwick. Vice-Presidents: W. P. Payn, A. W. Cooper, J. W. McKenzie and Chas. Nicholson. Honorary Treasurer: R. Nicholson. Hon. Secretary: Tom McCrystal. Committee: J. W. T. Marwick, Evan Harries, R. A. McKenzie, F. O. Howes, H. M. Moyes, W. Comrie, Thos. Marwick, J. C. Nicholson, J. W. Flett and E. J. B. Ho King.

RICHMOND ROAD FARMERS' ASSOCIATION.—President: Thos. Stead, J.P. Vice-President: W. Mapstone. Secretary and Treasurer: W. L. Stead, New Leeds, P.O. Committee: D. Malcolm, J. Mapstone, W. P. Payne, J. James, J. Sinclair, W. S. Crouch, H. B. Boyd, W. Middleton, W. Oldfield, T. E. Horwood.

ROYAL AGRICULTURAL SOCIETY OF NATAL.—President: Sir G. M. Sutton, K.C.M.G. Vice-Presidents: W. S. Chart, Jas. King, D. C. Dick, G. J. Macfarlane, C.M.G., O. Hosking, with His Worship the Mayor, *ex officio*. Secretaries, Treasurers and Collectors: Duff, Eadie & Co., 12, Timber Street, Pietermaritzburg. Yard Superintendent: H. J. Storton. Auditor: G. V. Lambert. General Committee: T. J. Allison, W. H. Buchanan, F. G. Burchell, W. H. Cobley, P. H. Campbell, R. Comins, W. P. Gough, E. S. Goodwill, K. H. Hathorn, K.C., T. W. J. Hall, J. Hall, A. W. Herbert, L. Lin, Col. Sir D. Mackenzie, K.C.M.G., Jas. Morton, Sir T. K. Murray, Jno. Moon, W. J. O'Brien, P. Otto, R. H. Pepworth, J. F. Potterill, A. Robinson, Rev. J. Scott, P. D. Simmons, H. Solomon, W. L. Stead, H. J. Storton, Dr. Oddin Taylor, F. W. Jameson, S. J. Mason. Executive Committee: President, Vice-Presidents and W. J. O'Brien, A. W. Herbert, W. H. Cobley, K. H. Hathorn, K.C., and Col. E. M. Greene. Members appointed by Corporation: Councillors Ireland, Sanders and Hathorn.

SLANG RIVER (UTRECHT) FARMERS' ASSOCIATION.—Chairman: P. J. Kemp; Executive Committee: J. J. Uys, J. Z. Moolman, T. J. Botha, P. J. Viljoen, P. J. Kemp; Hon. Sec. and Treasurer, Thys Uys, Utrecht P.O.

UMSINGA-BIGGARSBERG FARMERS' ASSOCIATION.—President: E. C. Nuss. Vice-President and Acting Secretary: Geo. S. Saunders, Helpmakaar.

UMVOTI AGRICULTURAL SOCIETY.—President: Major T. Menne. Vice-Presidents: J. H. J. Nel, M.L.A., W. J. Slatter, W. L'Estrange. Executive Committee: Tol Nel, A. Newmarch, W. Lilje, O. Rottcher, S. C. Van Rooyen, W. Newmarch, E. J. Van Rooyen, O. Norton, I. M. Nel, J. Browning. Managers of Show Yard: J. M. Handley and N. Hunter. Hon. Auditor: W. K. Ente. Secretary and Treasurer: W. H. Gibbs.

UMVOTI FARMERS' ASSOCIATION.—President: P. R. Botha (J.'s son). Vice-President: J. M. Handley. Secretary and Treasurer: G. E. Cadle (Box 6, Greytown). Auditor: J. M. Nel. Committee: W. J. Slatter, J. G. Nel, H. F. Torlage, R. J. Landsberg, A. Newmarch, P. H. van Rooyen, A. F. Handley.

UPPER BIGGARSBERG FARMERS' ASSOCIATION.—President: W. L. Oldacre. Vice-President: G. Langley. Hon. Secretary: W. F. B. Sutherland.

UTRECHT AGRICULTURAL SOCIETY.—Chairman: L. Viljoen; Vice-Chairman: B. H. Breytenbach; Members: I. Bierman, M. M. Knight, J. H. Klopper, B. C. Hatingh, T. Botha, M. Gregory, P. L. Uys, H. P. Breytenbach; Secretary: G. J. Shawe.

UTRECHT BOEREN VEREENIGING.—President: D. J. A. van der Spuy; Secretary: G. J. Shawe, Utrecht.

VICTORIA COUNTY AGRICULTURAL SOCIETY.—President: Lieut.-Colonel F. Addison; Vice Presidents: Sir Liege Hulett, Kt., M.L.A., W. J. Thompson, Esq., J.P., J. Polkinghorne, Esq., M.L.A.; Committee: Messrs. W. H. B. Addison, G. S. Armstrong, M.L.A., C. Bishop, J.P., D. Brown, sen., J.P., W. Campbell, T. G. Colenbrander, A. E. Foss, J.P., A. S. L. Hulett, J.P., J. B. Hulett, C. Jackson, G. Nicholson, J.P., T. Polkinghorne, J. W. Perkins, J.P., E. Saunders, J.P., G. Stewart, and J. H. Stansell; Hon. Secretary and Treasurer: H. Curtis Smith (Stanger)

VRVHEID (WARD I) AGRICULTURAL SOCIETY.—President: E. Dalton. Vice-President: J. F. Potgieter. Secretary: F. Kolbe. Assistant Secretary: H. Lombaard. Committee: Secretary, Assistant Secretary, and A. von Levetzow, T. Ries, P. Grobler, F. Molman, A. Steenkamp.

WEENEN AGRICULTURAL SOCIETY.—President: Alban Stuart; Vice-Presidents: R. Garland, R. H. Ralfe, F. I. de Waal; Hon. Treasurer: F. C. Schiever; Hon. Secretary: E. Cautherley; Auditor: S. Wolff; Executive Committee: Hon. H. D. Winter M.L.A., J. W. Moor, M.L.A., D. W. Mackay, T. H. Hindle and E. L. Estrange; Manager of Show Yard: S. Vaughan; Assistant: A. Clouston.

WEENEN COUNTY HORTICULTURAL SOCIETY.—Committee of Management: The President and Treasurer of the Weenen Agricultural Society and C. J. Offord, G. W. Linfoot, T. J. Nunn, Dr. Brewitt, S. Vaughan; Hon. Secretary: E. Cautherley.

ZULULAND FARMERS' ASSOCIATION.—President: F. W. White; Vice-President: C. E. Symonds. Secretary: R. H. McAlister. Committee: Hon. D. C. Uijs, A. W. Symonds, H. T. James, R. J. Ort epp, J. N. R. Dixon.

ZULULAND COAST FARMERS' ASSOCIATION.—President: G. H. Hulett; Vice-President: C. Hill; Hon. Secretary and Treasurer: F. Brammage, Ginginhlovu.

(The Editor will be obliged if the Hon. Secretaries will supply him with lists of the Executives of their Associations.)

Cows Wanted.

WANTED urgently, cows just calved or due to calve. Old animals suitable; any breed.

Apply—P.O. Box 282,
Pietermaritzburg.

Diamond Drilling.

SOME of the departmental diamond drilling plants are at present disengaged and available for hire for boring for either minerals or water. Particulars as to terms of hire may be obtained from the undersigned.

CHAS. J. GRAY,
Commissioner of Mines.

Experiment Station Notices.

TREES FOR SALE.

To encourage tree-planting, transplants and seeds of forest trees are supplied by Government, so far as in stock, at the undermentioned rates, exclusive of carriage, from the Government Nursery, Central Experimental Farm, Cedara.

Transplants of Eucalyptus, Pines, Acacias, Casuarinas, Cupressus, etc., about 25 trees in each tin, at 8s. 4d. per 100 trees. Trees in separate tins at 1s. each.

Transplants of scarce kinds, larger trees, or surplus stock, when available will be charged at special rates, which will be furnished on application.

Tree seeds, in variety, at 6d. per packet. Price per pound, which fluctuates, will be furnished on application.

Package and postage of seed, when required, charged 1s. per lb. extra.

Orders for present or spring delivery should be addressed to the **Chief Afforestation Officer, Cedara**, and must be accompanied by a remittance in cash or postal order. Cheques cannot be accepted.

PURCHASE OF TREE SEEDS.

With a view to the encouragement of seed production in the Colony, offers are invited from persons having locally-grown seed of exotic trees for sale. Not less than one pound will be purchased; and a specimen bearing seed vessels or flowers should be sent for identification purposes. Offers should be made in the first instance to the Chief Afforestation Officer, Cedara.

SILVER POPLAR.

Root suckers of the Silver Poplar (*Populus alba*) can be supplied in any quantity, at 8s. 4d. per hundred, on application to the Chief Afforestation Officer, Cedara.

FEES FOR AGRICULTURAL ANALYSIS.

It is hereby notified that Farmers and others can secure analytical determinations from the Government Laboratory, Central Experiment Farm, Cedara, in accordance with the following scale of fees, which is subject to revision:—

	Scale I.	Scale II.
	£ s. d.	£ s. d.
FERTILIZERS AND FEEDING STUFFS:		
Determination of 1 constituent ...	0 7 6	0 5 0
2 or 3 constituents ...	0 15 0	0 10 0
Complete analysis ...	1 1 0	15 0
SOILS: Partial analysis of a soil in relation to its fertility ...	1 1 0	0 10 6
Complete analysis of a soil ...	2 2 0	1 1 0
WATER: Irrigation and drainage ..	1 10 0	0 10 6
VEGETABLE PRODUCE: Fodders, Ensilage, Grains, &c.	1 1 0	0 15 0
MILK, CREAM, BUTTER: Fat only ...	0 5 0	0 2 6
" : Complete ...	0 15 0	0 7 6
WATTLE BARKS AND TEA: Tannin ...	0 5 0	0 2 6
CATTLE DIPS: Quantitative analysis of 1 to 3 principal constituents ...	0 10 0	0 5 0
INSECTICIDES:		
Qualitative analysis each constituent ...	0 5 0	0 2 6
Quantitative " " " " ...	0 10 6	0 5 0

Scale No. 1 is applicable to samples handed in by Merchants and Dealers, and where trade interests are involved.

Scale No. 2 is applicable to samples forwarded by *bona fide* Farmers and Gardeners.

Samples will be accepted at the discretion of the Department, and must be properly selected and labelled.

The Department reserves the right to publish the results of any analysis performed by it; and, where such is deemed of sufficient public interest, it will remain at the discretion of the Department to remit any charges hereunder.

E. R. SAWER,

Director, Experiment Stations.

Acting Conservator of Forests.

November 22nd, 1907.

TENDERS FOR MONO-RAIL SYSTEM.

Tenders are invited for the purchase of 6,400 feet of mono-rail, with points, etc., and four sugar cane trucks, from the Central Experiment Farm.

Tenders should be addressed to the Director of Experiment Stations, Cedara, and should be submitted with the least possible delay.

MAIZE SEED.

Growers who may have for sale selected seed of the following types of maize are invited to communicate as early as possible with the Director of Experiment Stations, Cedara:—Horse Tooth, Hickory King, Boone County, Golden King and Yellow Dent.

CENTRAL EXPERIMENT FARM, CEDARA.

In order to minimise interference with the general course of work on the Central Experiment Farm, Cedara, it has been found necessary to set apart one day of the week, namely, Friday, as a visitors' day.

Arrangements will accordingly be made on that day for receiving visitors and showing them round the Farm. A trap will be at Cedara Station to meet the up 9.50 a.m. train; and if intending visitors from up-country will give notice to the guard at Howick Station, on their way down, a trap will be sent to meet the train which passes through Cedara at 11.2 a.m. Visitors travelling by other trains will also be met if they will previously make arrangements by writing.

On other than the visitors' day, visitors may be received by appointment, but special attention cannot be guaranteed in regard to their being shown round.

As the catering involves such a strain upon the resources of the School of Agriculture, it has been decided to limit the number of delegates from any one Association to 25 per cent. of its membership. At least 14 days' clear notice must be given by Associations, so that there may be time to make all necessary arrangements.

In view of the fact that Parliament has refused to grant the necessary funds, the cost of rail way tickets can no longer be borne by the Department of Agriculture.

All communications in connection with proposed visits to the Experiment Farm should be addressed to the Director of Experiment Stations, Cedara.

24th September, 1907.

W. A. DEANE Minister of Agriculture

Land and Agricultural Loan Fund.

The Land and Agricultural Loan Fund has now been established, and the Board are prepared to receive applications for advances on security of first mortgage on fixed property. Applications must be made upon special printed forms, which can be obtained, together with full particulars as to the conditions under which advances are made, from the office of the fund, Post Office Buildings, Pietermaritzburg.

All correspondence should be addressed to the Secretary, Land and Agricultural Loan Fund, P.O. Box 357, Pietermaritzburg.

Government Abattoirs and Cold Stores.

PIETERMARITZBURG.

CATTLE may now be received for slaughter at the Government Abattoir, Maritzburg and meat may be placed in the Cold Stores if so desired. It must, however, be understood that owners will be required to make their own arrangements for the sale of the meat of cattle sent in for slaughter, the Government being unable to offer facilities or to accept responsibility in this regard.

ABATTOIR CHARGES.

The charges for killing space, per month, are : —

Cattle up to 50 head Minimum charge £4.

Cattle over 50 head, in addition to above.. 1s. 3d. per head.

For cattle forwarded to Abattoir and disposed of to local butchers, an Abattoir Fee of 1s. per head will be charged.

For killing and handling Cattle, and placing same in Cold Storage, if required, or meat to be taken away by customer from hanging-room, the charge is 4s. per head (including Abattoir Fee).

COLD STORAGE CHARGES.

Chilling and Freezing Beef, 1st week 1s. 3d. per qr.

" " 2nd " 1s. "

" " Remaining weeks ... 9d. "

DURBAN.

(ABATTOIR ONLY.)

Cattle may be received for slaughter at the Government Abattoir, Point, Durban, As the Government is unable to offer facilities for cold storage at Durban, or for the sale of the meat of cattle sent for slaughter, it must be understood that owners will be required to make their own arrangements in these respects, and the Government is unable to accept responsibility in either regard at Durban.

ABATTOIR CHARGES.

For cattle forwarded to Abattoir and disposed of to local butchers an Abattoir Fee of 1s. will be charged.

The charges for killing and handling cattle will be 4s. 6d. per head (including Abattoir Fee).

Department of Agriculture, Maritzburg,
22nd May, 1908.

Publications Issued by the Department of Agriculture.

THE following publications, issued by the Department of Agriculture, are still in print, and copies may be obtained free (except those with price attached) upon application to the office of the *Agricultural Journal*, Department of Agriculture, Pietermaritzburg. The figures in square brackets (e.g. [1904]) are the years in which the various publications were issued.

No.

BULLETINS.

- 2.—"Manures on the Natal Market, 1902," by Alex. Pardy, F.C.S., Analyst. [1902.]
- 2a.—"Treatment of Milk and Cream, from the Producer to the Consumer," by E. O. Challis, Dairy Expert. [1904.]
- 4.—"Manures on the Natal Market, 1903," by Alex. Pardy, F.C.S., Analyst. [1903.]
- 6.—"Manures on the Natal Market, 1904," by Alex. Pardy, F.C.S., Analyst. [1904.]
- 7.—"Tree-planting in Natal," by T. R. Sim, F.L.S. Conservator of Forests. [1905.]
(Price 2s. 6d., post free.)
- 8.—"Agricultural Co-operation," by E. T. Mullens, Secretary, Minister of Agriculture. [1905.]
- 10.—"Manures on the Natal Market, 1905," by Alex. Pardy, F.C.S., Analyst. [1905.]
- 11.—"East Coast Fever," by S. B. Woollatt, Principal Veterinary Surgeon. [1906.]
- 12.—"Manures on the Natal Market, 1906," by Alex. Pardy, F.C.S., Analyst [1906.]

REPORTS.

- Annual Report of the Agricultural Department, 1902. (Includes Reports of the Director of Agriculture, Entomologist, Conservator of Forests, Dairy Expert, Editor *Agricultural Journal*, etc.). [1903.]
- Report of the Secretary, Minister of Agriculture: January 1, 1903, to June 30, 1904. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1905. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1906. [1906.]
- (For a continuation of the statistics given in these reports see reprint "Natal's Progress in 1906," noted below.)
- Fourth Report of the Government Entomologist: 1903-4. [1905.]
- Fifth Report of the Government Entomologist: 1904-5. [1906.]
- Sixth Report of the Government Entomologist: 1905-6. [1907.]
- (The Third Report of the Entomologist is included in the "Report of the Agricultural Department, 1902," noted above.)
- Report of the Conservator of Forests, 1902. [1903.]
- Interim Report of the Conservator of Forests up to December 31, 1905.
- Report of the Principal Veterinary Surgeon, for year ended 30th June, 1906. [1907.]
- First Annual Report of the Land Board, 1905. [1906.]
- Annual Report of the Land Board, 1906-7.

MISCELLANEOUS REPRINTS, ETC.

- Black Spot ("Letter Book Pages": reprinted from *Journal*.)
- Mealie Grubs (do do do)
- Mosquitoes (do do do)
- Woolly Aphis (do do do)
- Cotton. By A. N. Pearson, Director, A. E. & C. (Reprinted from *Journal*: 1904.)
- Co-operation. By E. T. Mullens, Secretary, Minister of Agriculture. (Reprinted from *Journal*: 1907.)
- Fibre Cultivation. (Reprinted from *Journal*: 1907.) This paper is a summary of Bulletin No. 13 of the Department of the Interior, Bureau of Agriculture, Manila.
- Citrus Fruit Export. (Reprinted from *Journal*: 1907.)
- Natal's Progress in 1906. (Reprinted from *Journal*: 1907.) The statistics contained in this paper are on the same lines as those in the Annual Reports for previous years of the Secretary, Minister of Agriculture.

MISCELLANEOUS REPRINTS ETC.—*Continued.*

- Sisal, Mauritius Hemp and other "Aloe" Fibres. By T. R. Sim, F.L.S., Conservator of Forests. (Reprinted from *Journal*: 1907.)
- The Fibre Industry of Mauritius. By Leonard Acutt, J.P., Tongaat; Member of the Land Board, Natal. (Reprinted from *Journal*: 1907.)
- South African Products Exhibition, 1907. Report of T. R. Sim on the Natal Exhibits. (Reprinted from *Journal*: 1907.)
- Poplar Timber for the Local Manufacture of Matches. By E. R. Sawyer, Director, E.S. (Reprinted from *Journal*: 1908.)
- Notes on Agriculture in Natal. [1905]
- Judging Fruit, Flower, Plants and Vegetables at Shows. By T. R. Sim, F.L.S., Conservator of Forests. [1906.]
- Agricultural Statistics, Natal, 1905-6. [1907.]
- Model Rules for Agricultural Co-operative Societies. (*Price 1s., post free.*)

SOUTH AFRICAN STUD BOOK.

A record of all classes of Stock: the object being to encourage the breeding of thoroughbred stock and to maintain the purity of breeds, thus enhancing their value to the individual owner, and to the country generally.

Applications for Membership and Entries of Stock should be addressed:—

- | | | |
|--------------------------|-----|--|
| For CAPE COLONY ... | ... | A. A. PERSSE, P.O. Box 703, Cape Town. |
| „ TRANSVAAL ... | ... | F. T. NICHOLSON, P.O. Box 134, Pretoria. |
| „ ORANGE RIVER COLONY... | ... | E. J. MACMILLAN, Government Buildings, Bloemfontein. |

THE SOUTH AFRICAN STUD BOOK

IS OBTAINABLE OF:—

T. MASKEW MILLER,
ADDERLEY STREET, CAPETOWN.

PRICE 10s. 6d.

A. A. PERSSE,
SECRETARY, SOUTH AFRICAN STUD BOOK ASSOCIATION

STUD.

G. W. & H. NOURSE, Stud Farm, Zee-Koe-Vlei (O.R.C.), Botha's Pass, Natal.—At Stud the following thoroughbreds: Kinglock, by Lochiel, dam Lady Kingsborough; took First and Championship last Durban Show; fee: ten guineas thoroughbred mares, eight guineas for approved half-bred mares. Wild Plunger by Pearl Diver (the champion sire of South Africa), dam Wild May; fee: five guineas. Toulon, pony stallion by Carbine, dam Normania, by St. Simon; fee: two guineas. Breeders of and For Sale—Thoroughbred and half-bred Entires, Saddle and Carriage Horses, Shorthorn and Devon Bulls, Merino and Hampshire Rams, Brown Leghorns, Partridge and White Wyandottes, Black Orpingtons. Telf grass seed.

QUIBELL'S LIQUID DIP.

Thousands of gallons of this is used in the Colony annually.

QUIBELL'S POWDER DIP.

This for several years has been sold in cases of **40** $2\frac{3}{4}$ lb. packets, mixing 1 to 30 gallons water, but to meet the wishes of Farmers regularly using this Dip it will in future be sold in cases containing **48** $2\frac{1}{4}$ lb. packets, mixing, 1st Dipping—1 to 25 gallons water; 2nd Dipping—1 to 50 gallons; thus, while in every way efficient for the eradication of scab, means a considerable saving in the cost of Dipping.

QUIBELL'S PASTE CATTLE DIP.

The popularity of this famous Dip is still maintained. Its reputation for keeping Cattle and Horses in a healthy condition is known to almost every farmer.

QUIBELL'S Disinfectant Fluid "KEROL."

Retains its high standard in germicidal efficiency. One bottle or drum of "Kerol" does the work of 15 bottles or drums of carbolic acid.

It is used by the South African Governments, Municipalities, Hospitals, etc., and should be used in every Home as a preventive against Infectious Diseases, for General Sanitary Purposes, for Kennels, Poultry, Stables, etc.

CHAS. W. HOLMES,

202, LONGMARKET STREET, PIETERMARITZBURG.

SOUTH AFRICAN REPRESENTATIVE—

QUIBELL BROS., Ltd., Newark (Eng.).

MOLASSINE MEAL

***For
Stock
of all
kinds.***

**Unsurpassed by any other
Food Condiment.**

EVERY PROGRESSIVE FARMER KNOWS
ITS VALUE AND USES IT.



TRY IT on any animal in low condition and
CONVINCE YOURSELVES.

Packed in 100 lb. Bags and stocked by all Produce
Dealers.

RAILAGE AT S.A.P. RATES.

For Pamphlets, etc., apply to—

**The MOLASSINE CO. (South Africa),
LIMITED,
BOX 400, DURBAN.**

Factory: MOUNT EDGECOMBE.



THE FOOD

for HORSES MULES, COWS, SHEEP,
PIGS, DOGS, and POULTRY.

South Devon Cattle.

Celebrated for the Dairy and the Butcher—are hardy and stand a sea voyage well. At the Bath and West Show at Newport in 1907 they beat all others in the Butter test classes; they are the heaviest cattle in the World, and produce beef of the highest quality. Pedigree Auction Sales at Totnes first weeks of October and April each year. All particulars of—

ALFRED MICHELMORE, *Secretary Herd Book Society,*
Gate House, Totnes, ENGLAND.

The Keeling Agency. Ltd.

OFFICES: **National Mutual Buildings,**
P.O. BOX 220. **JOHANNESBURG.**

PRODUCE, COMMISSION & EXPORT AGENTS.

Predecessors: SPENCE & DRURY, LTD. Established 1880.

Successors to (Agency Dept.) ABINGER KEELING & CO.

Bankers—The Standard Bank of South Africa Ltd., Johannesburg.

Security. Attention. Experience.

VETERINARY PAPERS FOR FARMERS,

—PUBLISHED BY—

The “Times” P. & P. Co., Ltd.,

222, Church Street, and Chancery Lane, Maritzburg.

BUTTER MAKING. ABORTION IN COWS.

LIVER ROT AND BRAXY.

WOUNDS AND CASTRATION.

LAMENESS AND HEREDITARY

PREDISPOSITION IN HORSES.

CURE OF HORSES’ LEGS AND FEET.

ANTHRAX. TUBERCULOSIS.

PARASITIC BRONCHITIS IN SHEEP,

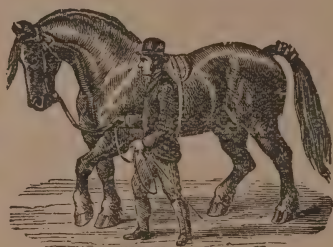
By Professor Wortley Axe.

Price 1s., Post, 1s. 1d.

BENTLEY & VANDERPUMP'S

CONDITION

POWDER.



PREVENTS

HORSE

SICKNESS.

READ THE FOLLOWING TESTIMONIALS:—

DEAR SIR,

I have used your Condition Powder and have found it to surpass anything I had tried. My horses felt the benefit of the Powder before many days, and I find that the use of the Powder for a few days from time to time, keeps them in perfect condition and free from disease of every description.

Yours faithfully, EUGENE RENARD.

TO LENNON LIMITED, Durban.

THE BRICK YARDS, UMGENI, DURBAN, NATAL,

DEAR SIR,

September 26th, 1900.

For many years past I have purchased Bentley and Vanderpump's Condition Powders as a Medicine for the Horses and Mules in use at my Brick Fields, and I must say that I cannot estimate the value of the Powders sufficiently, as my stables are always free from sickness, and I have never had any serious outbreak among my stock, which I put down entirely to the regular use of your Powders.

They seem to be the only preventive of Horse Sickness that I know of.

You are at liberty to make what use you like of this letter.

Yours faithfully, J. J. JOHNS

MESSRS. LENNON LIMITED, West Street, Durban.

WENTWORTH, NATAL.

DEAR SIR,

September 30th, 1903.

I have used Bentley & Vanderpump's Horse Condition Powders continuously during the last four years, and am fully convinced that they act as a preventive, and I have to thank them for the fact that my horse did not take sickness last season when horses died all round me.

I am never without B. & V. Powders in the stable.

Yours faithfully, H. A. JACOB.

THIS Powder should be given to all Horses occasionally; it keeps them in good condition by giving tone to the Stomach and purifying the blood. For Grease, Swelled Legs, Coughs and Influenza, it is the Best Remedy.

The dose is a teaspoonful given every night for a week, in a mash or feed of corn, and the horse can be worked as usual all the time, being in fact more fit.

IN TINS AT 2/6, 9/- AND 15/- EACH.

May be obtained from Chemists and Store Keepers throughout S. Africa.

SOLE PROPRIETORS—

LENNON LIMITED

Cape Town.
Port Elizabeth.
Johannesburg.
East London.
Durban.

Bulawayo.
Bloemfontein.
Graaff Reinet.
Aliwal North.
Kimberley.

Beaufort West.
Oudtshoorn.
Mafeking.
Fordsburg.
Germiston.

Wynberg.
Paarl.
Stellenbosch
and
London, England.

BEWARE OF IMITATIONS.

PEARL SOAP!

— WHAT IS IT? —

It is JUST THE BEST SOAP for all Household Purposes that can be bought. It is ABSOLUTELY PURE, therefore no INJURY TO THE CLOTHES. It gives a SWEET, FRESH SMELL to the clothes that is absent in other Soaps. It is not the CHEAPEST at the beginning, but, because it lasts longest, IT IS THE CHEAPEST IN THE END.

PEARL SOAP

— IS —

NATAL SOAP.

AND PACKED 3 TWIN TABLETS IN CARTON.

—:O:—

If you want to SAVE MONEY, and at the same time

HELP NATAL ALONG,

Ask for Pearl Soap.

SOLD AT 1s. PER PACKET BY ALL PATRIOTIC GROCERS.

—:O:—

If your Grocer does not stock PEARL SOAP please write to the

. . . MANUFACTURERS . . .

**NATAL SOAP WORKS, LIMITED,
DURBAN.**

The Corn Exchange. (ESTABLISHED 1868.)

R. MASON & SON,
289, CHURCH STREET, PIETERMARITZBURG,
MILLERS,
Grain, Produce, and Seeds Merchants.

SPECIAL.—Boer Meal, Crushed Wheat and Rolled Wheat (Kühne System).

PIGEON FOODS.—Maple Peas, Hemp, &c., &c. Poultry and Chicken Mixtures. Thorley's Ovum.

HORSE-FOOD.—Rolled Oats, Wheaten Bran, Crushed Mealies, Molassine Meal, Rock Salt, Chaffed Forage and Lucerne, &c., &c., also Cow Meal.

FARMERS' AGENCY.—Consignments of Produce of all kinds realised to best advantages. Account Sales prompt with remittances.

SEEDS ! SEEDS !!

We hold Prime Fresh Stocks of:—

Mangel Wurzel, Swedes, Turnips, Sugar Beet,
Paspalum, Italian and Perennial Ryegrass,
Provence Lucerne, Rape (Dwarf Essex), Thousand
Headed Kale, Cow Peas, Black Wattle,
etc., etc.

For description, mode of cultivation and prices, see our New Catalogue (free on application).

R. MASON & SON,
THE CORN EXCHANGE SEEDS DEPARTMENT,
289, Church Street, Maritzburg.

P.O. Box
21

GEORGE BARFIELD & CO.,

TELEPHONE
391

212, Longmarket Street, Maritzburg.

**Builders of High-
Class Vehicles.
Both for Town
and
Country Use.**

**New and Second-
hand Vehicles al-
ways on Hand.**



**Estimates given
for all kinds of
Carriage Work.**

Direct Importers.

**The Trade sup-
plied at most rea-
sonable Prices.**

The Wattle Extract Co.

**16 & 17, ANGLO-AFRICAN HOUSE,
SMITH STREET, DURBAN.**

—BUYERS OF—

WATTLE BARK

IN ANY QUANTITY. PROMPT SETTLEMENTS ON RECEIPT OF GOODS.

HIGHEST PRICES GIVEN. NO COMMISSION CHARGED.

- - CORRESPONDENCE INVITED - -

P.O. Box 734.

Telegrams: "ATLANTIC."

NOW READY

A Fruit Grower's
HANDBOOK

BY

CLAUDE FULLER.

PREPARED FOR THE USE OF FRUIT GROWERS, WITH NUMEROUS
SELECTED ILLUSTRATIONS.

Price 7s. 6d., including Postage.

THE TIMES PRINTING & PUBLISHING CO., LTD.,

P.O. BOX 204.

The Times Printing & Publishing Co., Ltd.,

P.O. Box 204, Pietermaritzburg.

Please send me.....cop.....of the book entitled "A Fruit Grower's Handbook," by Mr. Claude Fuller, for which I enclose £ s. d.

[Sign here] _____

Address _____

ACETYLENE GAS LIGHT.

BRIGHTEST, CHEAPEST, BEST.

ACETYLENE GAS LIGHT.

FOR PRIVATE RESIDENCES, CHURCHES, PUBLIC BUILDINGS, ETC

ACETYLENE GAS LIGHT.

UNRIVALLED IN SIMPLICITY, SAFETY, AND ECONOMY.



For Free Estimates Write to:—

Large Quantities of
CALCIUM
CARBIDE
Always in Stock.

L. Hirsch & Co.,

ACETYLENE GAS ENGINEERS,

142, WEST STREET, DURBAN.

P.O. BOX 518.

HAYNE & CO.,

GENERAL BUYERS OF NATAL PRODUCE.

Mealies, Kafir Corn, Wattle Bark,

ETC., ETC., ETC.

— ADDRESS —

72 & 74, COMMERCIAL ROAD, DURBAN.

— ALSO AT —

8, HARRISON STREET, JOHANNESBURG.

When you ask for

BOVRIL

do not take a cheap imitation. BOVRIL is all beef and is a standardised strength-giving food.

Always have BOVRIL handy,

By Royal Warrant to



His Majesty the King.



TO FARMERS. . . .

The "Times of Natal."

SPECIAL NEW SCALE FOR SMALL PREPAID ADVERTISEMENTS IN PEOPLE'S COLUMNS.

A MOST POPULAR AND EFFECTIVE METHOD OF ADVERTISING.

The "Times of Natal," with a view of still further popularising the paper as a medium for the insertion of "Small" Advertisements, have arranged a REVISED SCALE OF CHARGES for this class of advertisements.

Special Headings are given to "LIVE STOCK," "PRODUCE," etc., and thus Farmers announcements enjoy a particular prominence,

This Scale only applies to advertisements accompanied by remittance. Advertisements of this class, which are not prepaid, will be charged at a higher rate,

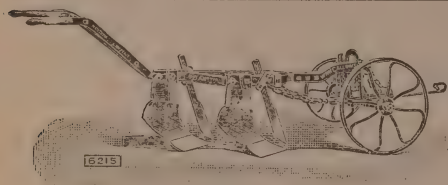
SCALE OF CHARGES.

NUMBER OF WORDS.	NUMBER OF INSERTIONS.			
	One.	Three.	Six.	Over Six.
20	1s.	2s.	3s.	6d. per insertion
30	1s. 6d.	3s.	4s. 6d.	9d. "
40	2s.	4s.	6s.	1s. "
50	2s. 6d.	5s.	7s. 6d.	1s. 3d. "
Every additional 10 Words	6d.	1s.	1s. 6d.	3d. "

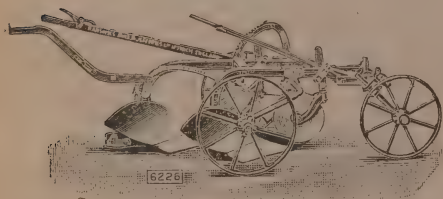


DISC HARROWS,

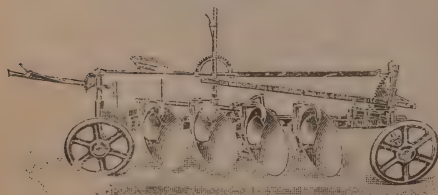
With Steel Weight Trays and Trucks.



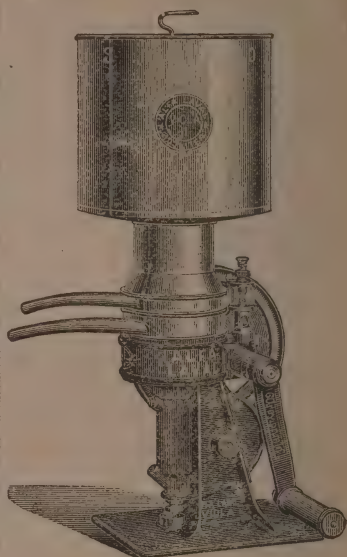
PLANET.



INVINCIBLE.



DISC.



**NEW
MODEL Alfa Laval
Cream Separator,**
Never beaten in competition.

**RANSOME'S
PLANET,
INVINCIBLE,
AND DISC
PLOWS.
ALL PRIZE TAKERS.**

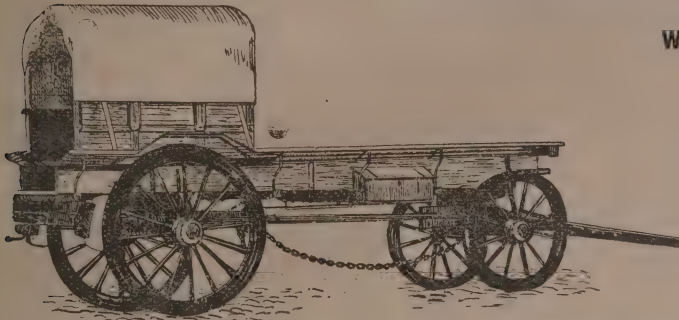
**STEEL MURRAY & Co.,
PIETERMARITZBURG.**

J. MERRYWEATHER & SONS, Wagonmakers, Blacksmiths, &c.,

Supply Wagons of every description on Shortest Notice and at Low Prices; Workmanship and Material Guaranteed. Tip Carts, Light Delivery Carts; also Light Spring Carts suitable for Farmers and Dairy-men.

TROLLEYS, both Heavy and Light.

WHEELBARROWS.



All Sizes of Wheels
in Stock or Made
to Order.

Sneezewood, Stinkwood, Stinkwood Shafts Sawn or Bent to Shape, Forgings, either for Ploughs Wagons, or Mowing Machines.

352, CHURCH STREET, PIETERMARITZBURG.

BY SPECIAL
APPOINTMENT TO



HIS EXCELLENCY
SIR HENRY MCCALLUM,
K.C.M.G.

M'CRYSTAL & HARKNESS,

Saddlers and Harness Makers,

186, CHURCH STREET, PIETERMARITZBURG.

Postal
Address:

P.O. 176,

Maritz-
burg.

FARMERS, STUDY YOUR INTERESTS

By Buying Sound and Reliable Goods.

- - THIS CAN BE DONE - -

By placing your orders with

Tele-
graphic
Address

Saddlery;
Maritz-
burg

LYLE BROTHERS,

**Saddlers Harness,
and Bag Makers.**

246, Church Street, Maritzburg.

Whose endeavour has always been to give the best value at lowest possible prices consistent with quality. Harness and Saddlery of every description made to order. Large Stocks on Hand.

REPAIRS EXECUTED WITH NEATNESS AND DISPATCH.

Branches - LADYSMITH. DUNDEE. AND VRYHEID

FLEET.

	Tons.
S.S. Umhlali ...	5,000
" Umzumbi...	5,000
" Umvolosi...	4,500
" Umsinga ...	4,500
" Umtata ...	3,500
" Umgeni ...	3,500
" Umvoti ...	3,500
" Umtali ...	3,500

**FLEET.**

	Tons.
S.S. Umfuli ...	3,300
" Umhloti ...	3,100
" Umkuzi ...	2,800
" Umbilo ...	2,500
" Umlazi ...	2,200
" Umzinto ...	2,200
" Congella ...	2,200
" Pongola ...	1,800

FORTNIGHTLY FAST DIRECT SERVICE BETWEEN LONDON AND NATAL.

To Importers of LIVE STOCK, POULTRY & DOGS:—

This Line of Steamers affords excellent advantages for the importation of Live Stock of all kinds, and has an unrivalled record for the carriage of the best Pedigree Live Stock and Poultry of the Colony.

:o:

The Steamers of the London Service have Saloon accommodation amidships on the Main Deck, and are fitted with Refrigerators, Electric Light, and Bells. Surgeon and Stewardess carried.

:o:

Particulars of Sailing Dates, Freight, and Passage may be had on application to:—

KING & SONS, WEST STREET, DURBAN

***If You are INTERESTED in the INDUS-
TRIES OF THE COLONY, You are the
man we WANT TO TALK TO.***

— FOR —

Spiders, Buggies, Carts, etc.,

We are holding our own against all comers.

We have won 7 Medals in six weeks at 3 Shows.

At the Royal Show, 1908, in the best turnout, the 1st and 3rd prizes were awarded to carriages which were built at our factory.

:o:

Get our prices and photos and copy of testimonials. All wheels made at our factory. Note address—

H. W. Reeve & Co.,

UMVOTI STEAM CARRIAGE
AND WAGON WORKS . . .

GREYTOWN.

FERTILIZERS.

WE ARE NOW BOOKING ORDERS FOR—

SUPERPHOSPHATE, ALL GRADES,
BASIC SLAG,
BONE MEAL,
POTATO MANURE, SPECIAL,
POTATO MANURE, FARMERS,
MIXED MANURES OF ALL KINDS,
NITRATE OF SODA,
MURIATE OF POTASH,
AND ALL OTHER MANURES.

ALL OF THE BEST QUALITY AND WITH A GUARANTEED ANALYSIS.

WRITE FOR PRICE LIST.

— SOLE AGENTS FOR —

J. & F. HOWARD'S celebrated B.Z., T.C.C.C., N.A., and other high class Ploughs, Harrows, &c.

BRADLEY'S Gang, Disc and "Royal Blue" Ploughs, Disc Harrows
 MEALIE PLANTERS, &c.

MASSEY-HARRIS Binders, Reapers, Mowers and Rakes.

HARDWARE.

FURNITURE.

CROCKERY.

P. Henwood, Son, Soutter & Co.,
DURBAN and MARITZBURG.

ODAMS' Fertilizers

QUALITY UNIFORM, AND ANALYSIS GUARANTEED.

ODAMS' "Complete" Fertilizer for Potatoes, Forage, and General Use.—It contains the elements necessary for vigorous and healthy plant life. Where the crops are entirely removed from the land, and nothing, or but little returned to it except in the form of cattle manure or decomposed vegetable refuse, a moderate application of ODAMS' COMPLETE FERTILIZER is calculated to maintain the soil in a state of fertility, and restore to productiveness soils exhausted by continuous cropping. This Manure for Potatoes is calculated to procure a PROLIFIC YIELD of Large Sound Tubers, without the assistance of Kraal Manure. ENORMOUS YIELDS HAVE BEEN RAISED by the aid of ODAMS' "COMPLETE" FERTILIZERS on Potatoes. It is the most economical Manure in use.

ANALYSIS—

18 to 20 per cent. of Soluble Phosphate.			
5 to 7	"	Undissolved Phosphate.	
4 to 5	"	Ammonia.	
2 to 3	"	Pure Potash.	

ODAMS' Vitriolized Bones

(PURE DISSOLVED BONES).

Vitriolized Bones are very lasting in their effects, and greatly improve the productiveness of the land, being rich in undissolved Bone, Phosphates, and Ammonia. By the treatment the Bone is only partly dissolved, but all is in a softened state, suitable for the continuous nourishment and rapid growth of the plant. Bone thus Vitriolised will be found to give great permanence of fertility in all varieties of soils—and far superior results than Bone Dust or Mealies.

ANALYSIS—

32 to 35 per cent. Total Phosphates.			
12 to 16	"	Soluble	"
2.47 to 2.66 per cent. Nitrogen equal to			
3 to 3 per cent. Ammonia.			

Large Shipments of the above Fertilizers are now due to arrive, in time for the coming season, and large repeat orders from leading Natal Farmers have already been placed for delivery on arrival.

In the present state of Railway Traffic, it is very necessary that orders should be placed early to ensure despatch in time.

PRICE AND FULL PARTICULARS—

W. DUNN & CO., DURBAN,

AGENTS

ODAMS' MANURE & CHEMICAL Co., LIMITED.

THE Petrolite Lamp.



PORTABLE. INCANDESCENT.

NO LIQUID. NO WICK.

IF OVERTURNED GOES OUT. ACCIDENTS IMPOSSIBLE.
NO WORKING PARTS. COSTS LESS THAN PARAFFIN.
SIX HOURS OF BRIGHT, STEADY 50-CANDLE-POWER
LIGHT FOR ONE PENNY.

Awarded the Keith Prize for Safety & Economy
INSURANCE NOT AFFECTED BY ITS USE.

SOLE AGENT—

John Mayhew, 2, Castle Arcade, Durban.

— P.O. BOX 733.

HUNT, LEUCHARS & HEPBURN, LTD.,

TIMBER MERCHANTS, . . . DURBAN.

**Large Stocks of TIMBER, GALVANISED IRON and all
BUILDING REQUISITES.**

**Estimates given for Wood and Iron Buildings of Every Description and All
Classes of Joinery Work.**

GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.

P.O. Box 455.

Telegraphic Address: "HUNT."

And at JOHANNESBURG.



AWAY WITH BRUSHES!

BEST WHITEWASHING-DISINFECTING MACHINE.

REPLACES 10 TO 20 MASONS.

"FIX" is employed for painting stalls, walls, dwelling houses, breweries and fermenting cellars; and can be put to various other uses.

... "FIX" SPARES TIME, MONEY and WORK ...

Apply for prospectus at the offices of this Journal. Agents Wanted.

Manufacturer:—**STEPHAN, Scharley, Germany.**

Agricultural Pests

... WITH ...

... METHODS OF PREVENTION,

... BY ...

MISS E. A. ORMEROD,

Late Consulting Entomologist to the Royal
Agricultural Society (of England).

Price 1s. By Post, 1s. 1d.

The Times P. & P. Co., Ltd., Maritzburg.

STEWARTS AND LLOYDS (SOUTH AFRICA) LTD.,

MANUFACTURERS OF WROUGHT IRON

TUBES AND FITTINGS

FOR GAS, STEAM, AIR, AND WATER.

BOILER TUBES.

WELL TUBES.



DURBAN STORE.

Large Stocks held in Durban and Maritzburg of all Sizes
from $\frac{1}{4}$ in to 12 in. English and American Thread.

BOILER TUBES from 2 in. to 4 in.

All Classes of Valves and Cocks Stocked.

Durban Office: 310a, SMITH STREET.

P.O. BOX 131.

Stores: **SMITH STREET.**
MILNE STREET.

Telephone No. 352.

Tele. Add.: "TUBES," Durban and
Pietermaritzburg.

Maritzburg Stores and Offices: COMMERCIAL ROAD.

— THE —
“Times of Natal.”

(Established 1851.)

Two Editions Daily.

The Best Paper for Farmers.

Two Columns Daily on Agricultural Topics

Full Cable Services.

Latest Transvaal & Natal Trade & Market Reports.

Interesting Special Features.

Local and Dist ict News.

SUBSCRIPTIONS :

NATAL AND ZULULAND:—Daily, £1 6s. per annum; including Weekly Edition, £1 10s.; Weekly Edition only, 12s.

OTHER PARTS OF SOUTH AFRICA.—Daily, £2 per annum; including Weekly Edition, £2 12s.; Weekly Edition only, 18s.

UNITED KINGDOM AND BRITISH COLONIES.—Daily, £2 10s. per annum; including Weekly Edition, £3s. 2s.; Weekly Edition only, £1.

Printing, Publishing and Advertising Offices :

222, Church Street, and Chancery Lane, Maritzburg.

FENCING MATERIAL

Large Stocks of Barbed and Plain Wire
Standards and Straining Posts.

— GATES, —

Cyclone Droppers (or Pickets) and Loops
in Stock or Made to Order.

Also Cyclone Patent Lever Gate.

CYCLONE GATE & FENCE CO., LTD.,

315, CHURCH STREET (Opposite Market Square).

Telegrams—"CYCLONE."

BOX 289.

P.O. BOX 879.

Telegraphic Address: MILLING, DURBAN.

The Natal Mill Elevator Co.

Bankers: The Natal Bank, Ltd.

Mills: UMBILO.

Offices: 319, SMITH STREET, DURBAN.

—WE ARE—

BUYERS OF MEALIES AND WHEAT

—IN ANY QUANTITY—

*** FOR CASH. ***

G. MONHAUPT & Co.,

CABLE ADDRESS—

"MONHAUPT."

P.O. BOX 26.

TELEPHONE 308.

The Esplanade (Corner of
Mona Rd.),
Durban, Port Natal.

— Exporters of —

Wool, Mohair, Hides, Skins, Bark, Maize and other Produce.

Woolpacks, Grain Bags and Bark Bags always on hand.

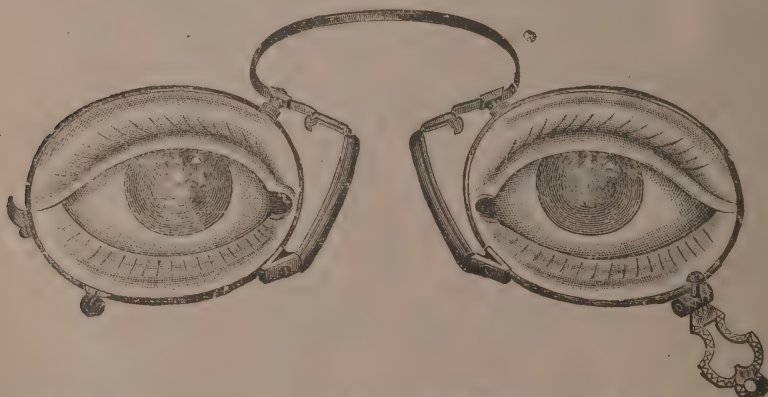
— Agents for —

BUREAU VERITAS GERMANISHER LLOYD

CLASSIFICATION OF SHIPS.

ASSOCIATIONS OF HAMBURG AND BREMEN UNDERWRITERS.

— SETTLEMENT OF CLAIMS. —



FARMERS and COUNTRY RESIDENTS

— Who find their —

EYESIGHT A TROUBLE.

Should make an Appointment with us BY POST.

CONSULTING HOURS—Mornings, 10 to 1. Afternoons, 3 to 5.

ELGIE & EMERSON,

F.S.M.C., LOND. (BY EXAM.),

EYE SIGHT-TESTING OPTICIANS,

49, Gardiner Street, Durban.

TO FARMERS.

**Four Homesteads with extensive
cultivated lands for rent,
SITUATED ON ESSEXVALE ESTATE, RHODESIA.**

Lands well watered, near Railway Station, and within
easy distance of Bulawayo. A number of working mines
in the vicinity.

— APPLY —

**The Matabele Reefs & Estates Co., Ltd.,
(P.O. BOX 413),
BULAWAYO.**

Calvert's Carbolated Creosote

Is the most reliable DISINFECTANT for all purposes. Mixes
readily in cold water, and can be used as a wash for Cattle,
Horses and Dogs. No farmer should be without it. Price
is low and quality guaranteed. In 1 gall. Tins, 5 or 10 gall.
Drums, and 50 gall. Casks. Prices on application to:—

Agent for **J. M. Wilson, 398, West Street, Durban.**
F. C. Calvert & Co.'s
Preparations. **P.O. BOX 282.**

— Under Royal Favour. —

'Petter' PATENT Oil Engine.

Awarded GOLD MEDAL at New Zealand International Exhibition, Christchurch, 1907.
Awarded SPECIAL PRIZE and GOLD MEDAL given by His Majesty the King of Italy for the Best Oil
Engine for Agricultural Purposes exhibited at the Royal Italian Exhibition, Cologna Veneta, 1907.
Awarded GOLD MEDAL at Wirral and Birkenhead Agricultural Society for the Best Combined Oil En-
gine and Dynamo, also the SILVER MEDAL for the Best Agricultural Oil Engine exhibited, 1907.

Illustrated Catalogues and Particulars of the "HANDY MAN" and
the "PETTER" Oil Engines posted to all parts. Apply to—

D. RIEKIE & CO., **Messrs. James B. Petter & Sons, Ltd.,**
DURBAN, Engineers, P.O. Box 188. **LONDON.**

CLARKE BROS. AND BROWN, LTD.

Specialists in Butchers', Bakers', & Dairymen's Requisites.

Sole Agents for **Ear-Rivets** for Marking Sheep, Cattle,
and all kinds of Live Stock.

LARGE STOCKS OF ALL KINDS OF DAIRY MACHINERY
AND APPLIANCES.

Plans and Estimates for
complete Factory Plants
for Milk Pasteurizing,
Butter Making and
Cheese Making, for-
warded on receipt of full
particulars.

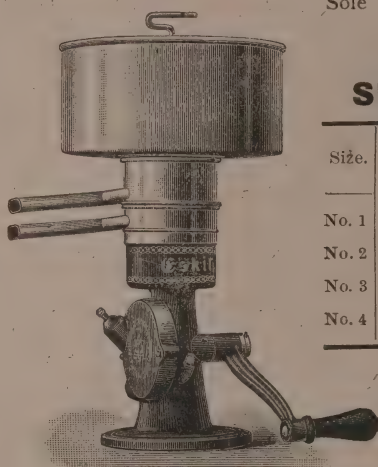
WRITE FOR OUR ILLUS-
TRATED CATALOGUE.

Sole Agents for the
**"Eskil" Cream
Separator,**

Made in one size only :
Guaranteed capacity
10 Gallons per Hour.

Price £4 15s. Nett.

Free on Rail, nearest
Railway Station.



Sole Agents in South Africa
for the

"VEGA" SEPARATOR.

Size.	Guaranteed Capacity per Hour.	Price.
No. 1	17 Gallons.	£8 10s.
No. 2	28 Gallons.	£10 10s.
No. 3	45 Gallons.	£14 10s.
No. 4	72 Gallons.	£19 10s.

Delivered Free on
Rail, nearest Railway
Station.

Sold under full
Guarantee.

AWARDS 1908.—*First Prizes have been won at Rose-
bank, Port Elizabeth, and Johannesburg, for
Best Collection of Dairy Appliances and
Machinery,*

For Prices and all particulars, please apply to—

CLARKE BROS. & BROWN, LTD.,
Dairy Supply Department,
287, Pine Street, DURBAN.

Also at—

JOHANNESBURG, CAPETOWN, EAST LONDON, AND PORT ELIZABETH

THE Petrolite Lamp.

PORTABLE. INCANDESCENT.

NO LIQUID. NO WICK.

IF OVERTURNED GOES OUT. ACCIDENTS IMPOSSIBLE.
NO WORKING PARTS. COSTS LESS THAN PARAFFIN.
SIX HOURS OF BRIGHT, STEADY 50-CANDLE-POWER
LIGHT FOR ONE PENNY.

Awarded the Keith Prize for Safety & Economy
INSURANCE NOT AFFECTED BY ITS USE.

SOLE AGENT—

John Mayhew, 2, Castle Arcade, Durban.

— P.O. BOX 753.

HUNT, LEUCHARS & HEPBURN, LTD.,

TIMBER MERCHANTS, . . . DURBAN.

~~~~~  
**Large Stocks of TIMBER, GALVANISED IRON and all  
BUILDING REQUISITES.**

~~~~~  
Estimates given for Wood and Iron Buildings of Every Description and All
Classes of Joinery Work.

~~~~~  
GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.

P.O. Box 455.

Telegraphic Address: "HUNT."

**And at JOHANNESBURG.**





## AWAY WITH BRUSHES!

BEST WHITEWASHING-DISINFECTING MACHINE.

REPLACES 10 TO 20 MASONS.

"FIX" is employed for painting stalls, walls, dwelling houses, breweries and fermenting cellars; and can be put to various other uses.

... "FIX" SPARES TIME, MONEY and WORK ...

Apply for prospectus at the offices of this Journal. Agents Wanted.

Manufacturer:—**STEPHAN, Scharley, Germany.**

## Agricultural Pests

... WITH ...

## ... METHODS OF PREVENTION,

... BY ...

**MISS E. A. ORMEROD,**

Late Consulting Entomologist to the Royal  
Agricultural Society (of England).

**Price 1s. By Post, 1s. 1d.**

**The Times P. & P. Co., Ltd., Maritzburg.**



# **STEWARTS AND LLOYDS** (SOUTH AFRICA) **LTD.,**

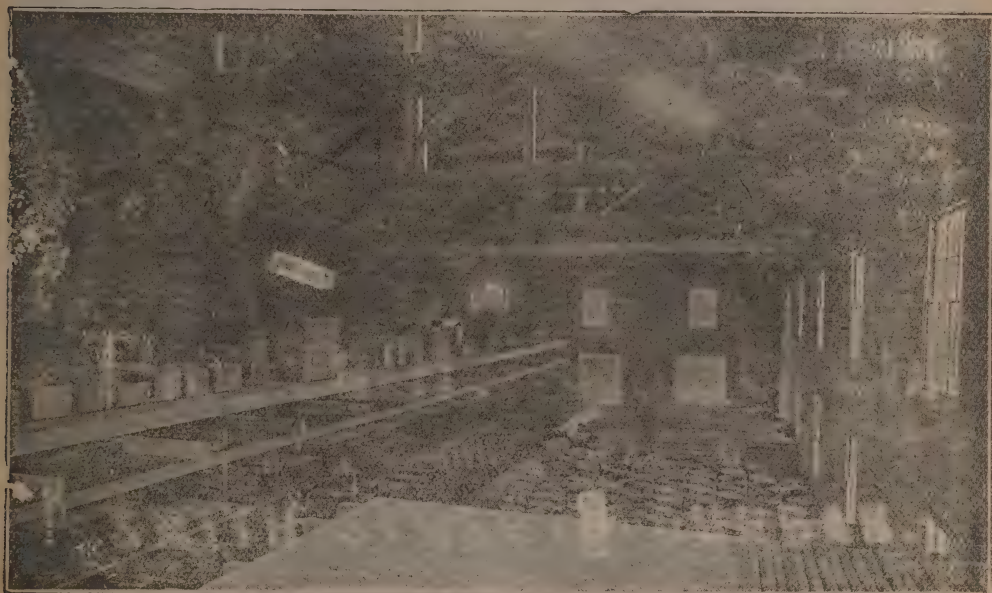
MANUFACTURERS OF WROUGHT IRON

## **TUBES AND FITTINGS**

FOR GAS, STEAM, AIR, AND WATER.

**BOILER TUBES.**

**WELL TUBES.**



### **DURBAN STORE.**

Large Stocks held in Durban and Maritzburg of all Sizes  
from  $\frac{1}{4}$  in to 12 in. English and American Thread.

**BOILER TUBES** from 2 in. to 4 in.

**All Classes of Valves and Cocks Stocked.**

**Durban Office: 310a, SMITH STREET.**

P.O. BOX 131.

Stores: **SMITH STREET.**  
**MILNE STREET.**

Telephone No. 352.

Tele. Add.: "TUBES," Durban and  
Pietermaritzburg.

**Maritzburg Stores and Offices: COMMERCIAL ROAD.**

---

— THE —

# “Times of Natal.”

(Established 1851.)

***Two Editions Daily.***

---

**The Best Paper for Farmers.**

---

**Two Columns Daily on Agricultural Topics**

---

***Full Cable Services.***

***Latest Transvaal & Natal Trade & Market Reports.***

***Interesting Special Features.***

***Local and District News.***

---

## SUBSCRIPTIONS :

NATAL AND ZULULAND:—Daily, £1 6s. per annum; including Weekly Edition, £1 10s.; Weekly Edition only, 12s.

OTHER PARTS OF SOUTH AFRICA.—Daily, £2 per annum; including Weekly Edition, £2 12s.; Weekly Edition only, 18s.

UNITED KINGDOM AND BRITISH COLONIES.—Daily, £2 10s. per annum; including Weekly Edition, £3s. 2s.; Weekly Edition only, £1.

---

**Printing, Publishing and Advertising Offices :**

222, Church Street, and Chancery Lane, Maritzburg.

# **FENCING MATERIAL**

Large Stocks of Barbed and Plain Wire  
Standards and Straining Posts.

## **— GATES, —**

Cyclone Droppers (or Pickets) and Loops  
in Stock or Made to Order.

Also Cyclone Patent Lever Gate.

## **CYCLONE GATE & FENCE CO., LTD.,**

**315, CHURCH STREET (Opposite Market Square).**

**Telegrams—"CYCLONE."**

**BOX 289.**

**P.O. BOX 879.**

**Telegraphic Address: MILLING, DURBAN.**

## **The Natal Mill Elevator Co.**

**Bankers: The Natal Bank, Ltd.**

**Mills: UMBILO.**

**Offices: 319, SMITH STREET, DURBAN.**

**—WE ARE—**

**BUYERS OF MEALIES AND WHEAT**

**—IN ANY QUANTITY—**

**\* FOR CASH. \***

# G. MONHAUPT & Co.,

CABLE ADDRESS—

"MONHAUPT."

P.O. BOX 26.

TELEPHONE 308.

*The Esplanade* (Corner of  
Mona Rd.),

*Durban, Port Natal.*

— Exporters of —

Wool, Mohair, Hides, Skins, Bark, Maize and other Produce.

Woolpacks, Grain Bags and Bark Bags always on hand.

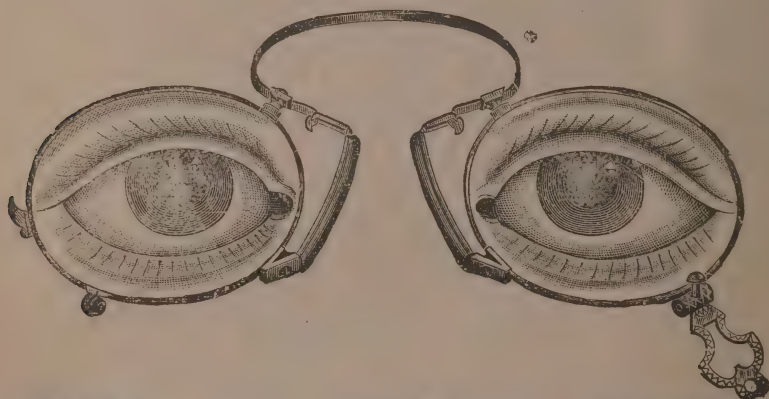
— Agents for —

BUREAU VERITAS GERMANISHER LLOYD

CLASSIFICATION OF SHIPS.

ASSOCIATIONS OF HAMBURG AND BREMEN UNDERWRITERS.

— SETTLEMENT OF CLAIMS. —



**FARMERS and COUNTRY RESIDENTS**

— Who find their —

**EYESIGHT A TROUBLE.**

*Should make an Appointment with us BY POST.*

CONSULTING HOURS—Mornings, 10 to 1. Afternoons, 3 to 5.

**ELGIE & EMERSON,** EYE SIGHT-TESTING OPTICIANS,  
F.S.M.C., LOND. (BY EXAM.), 49, Gardiner Street, Durban.



# TO FARMERS.

**Four Homesteads with extensive  
cultivated lands for rent,  
SITUATED ON ESSEXVALE ESTATE, RHODESIA.**

Lands well watered, near Railway Station, and within  
easy distance of Bulawayo. A number of working mines  
in the vicinity.

— APPLY —

**The Matabele Reefs & Estates Co., Ltd.,  
(P.O. BOX 413),  
BULAWAYO.**

## *Calvert's Carbolated Creosote*

Is the most reliable DISINFECTANT for all purposes. Mixes  
readily in cold water, and can be used as a wash for Cattle,  
Horses and Dogs. No farmer should be without it. Price  
is low and quality guaranteed. In 1 gall. Tins, 5 or 10 gall.  
Drums, and 50 gall. Casks. Prices on application to:—

**Agent for** **J. M. Wilson, 398, West Street, Durban.**  
**F. C. Calvert & Co.'s Preparations.** P.O. BOX 282.

— Under Royal Favour. —

## **'Petter' PATENT Oil Engine.**

Awarded GOLD MEDAL at New Zealand International Exhibition, Christchurch, 1907.  
Awarded SPECIAL PRIZE and GOLD MEDAL given by His Majesty the King of Italy for the Best Oil  
Engine for Agricultural Purposes exhibited at the Royal Italian Exhibition, Cologna Veneta, 1907.  
Awarded GOLD MEDAL at Wirral and Birkenhead Agricultural Society for the Best Combined Oil En-  
gine and Dynamo, also the SILVER MEDAL for the Best Agricultural Oil Engine exhibited, 1907.

Illustrated Catalogues and Particulars of the "HANDY MAN" and  
the "PETTER" Oil Engines posted to all parts. Apply to—

**D. RIEKIE & CO.,** Messrs. James B. Petter & Sons, Ltd.,  
**DURBAN, Engineers, P.O. Box 188.** LONDON.

# CLARKE BROS. AND BROWN, LTD.

Specialists in Butchers', Bakers', & Dairymen's Requisites.

Sole Agents for **Ear-Rivets** for Marking Sheep, Cattle,  
and all kinds of Live Stock.

LARGE STOCKS OF ALL KINDS OF DAIRY MACHINERY  
AND APPLIANCES.

Plans and Estimates for  
complete Factory Plants  
for Milk Pasteurizing,  
Butter Making and  
Cheese Making, for-  
warded on receipt of full  
particulars.

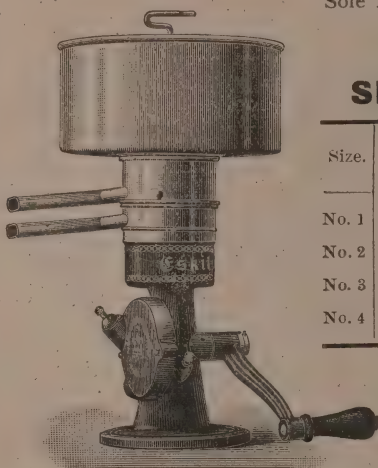
WRITE FOR OUR ILLUS-  
TRATED CATALOGUE.

Sole Agents for the  
**"Eskil" Cream  
Separator,**

Made in one size only :  
Guaranteed capacity  
10 Gallons per Hour.

Price £4 15s. Nett.

Free on Rail, nearest  
Railway Station.



Sole Agents in South Africa  
for the

**"VEGA"  
SEPARATOR.**

| Size. | Guaranteed<br>Capacity per<br>Hour. | Price.   |
|-------|-------------------------------------|----------|
| No. 1 | 17 Gallons.                         | £8 10s.  |
| No. 2 | 28 Gallons.                         | £10 10s. |
| No. 3 | 45 Gallons.                         | £14 10s. |
| No. 4 | 72 Gallons.                         | £19 10s. |

Delivered Free on  
Rail, nearest Railway  
Station.

Sold under full  
Guarantee.

AWARDS 1908.—*First Prizes have been won at Rose-  
bank, Port Elizabeth, and Johannesburg, for  
Best Collection of Dairy Appliances and  
Machinery,*

For Prices and all particulars, please apply to—

**CLARKE BROS. & BROWN, LTD.,**  
**Dairy Supply Department,**  
**287, Pine Street, DURBAN.**

Also at—

JOHANNESBURG, CAPETOWN, EAST LONDON, AND PORT ELIZABETH

# J. A. PETERS,

## Forage & Corn Merchant,

### Army Contractor,

## 184, Commercial Road,

## **MARITZBURG,**

Has for Sale at Lowest Rates:—

|             |   |                                                                                                                                     |  |                     |  |
|-------------|---|-------------------------------------------------------------------------------------------------------------------------------------|--|---------------------|--|
|             | ☺ |                                                                                                                                     |  | ☺                   |  |
|             |   | <b>French Early Rose Seed Potatoes</b><br>(just arrived).                                                                           |  |                     |  |
| RACE        |   | <b>Algerian Seed Oats</b> (reputed rust-resisting).                                                                                 |  | <b>SPECIALITIES</b> |  |
| HORSE       |   | <b>Lucerne Seed.</b>                                                                                                                |  | <b>IN</b>           |  |
| FOOD        |   | <b>Compressed Fodder</b> (American and Australian), <b>Lucerne</b> , <b>Australian</b> and <b>American Bran</b> , <b>Oil Cake</b> . |  | <b>HORSE BEANS</b>  |  |
| A           |   | <b>Best Whole and Rolled Feed Oats.</b>                                                                                             |  | <b>AND</b>          |  |
| SPECIALITY. |   | <b>Pigeon Peas</b> , <b>Fowls' Food</b> , <b>Oyster Shell</b> .                                                                     |  | <b>PIGEONS'</b>     |  |
|             |   | <b>Coolie Rice</b> , <b>Dholl</b> .                                                                                                 |  | <b>PEAS.</b>        |  |
|             |   | <b>Training and Ordinary Feed Forage</b> always on hand, and all kinds of <b>Produce</b> .                                          |  |                     |  |
|             | ☺ |                                                                                                                                     |  | ☺                   |  |

**COLONIAL PRODUCE BOUGHT AND DELIVERY TAKEN  
AT ANY RAILWAY STATION.**

Postal Address : P.O. BOX 197

Telegrams : "PETERS."

---

***NOW READY.***

---

**RULES**  
FOR THE  
**COURTS OF MAGISTRATES**

IN THE COLONY OF NATAL

To come into operation on **DECEMBER 1st, 1906**

Framed under Act 22, 1896,

**AND OTHER AMENDING ACTS,**

WITH

**The Magistrates' Courts Act**

(22, 1896).

**AND OTHER ACTS AMENDING SAME.**

NOTED, AND WITH FULL INDEX, AND INTERLEAVED FOR NOTING  
BOUND PAPER BOARDS WITH LEATHER BACK.

COPYRIGHT.

---

**Price 7s. 6d., or Post Free, 8s.**

---

**The 'Times' Printing & Publishing Co., Ltd.,**

222, Church Street, and Chancery Lane, Pietermaritzburg.



# **Seed Potatoes.**

## **(English Grown).**

**S**END your orders at once; am now preparing large quantities for importation of the following varieties, specially grown for seed purposes, carefully packed in ventilated cases containing 100 lbs. nett, and delivered F.O.B. London.

Up-to-date, Early Rose, Hebrons, Sharpe's Victor, King Edward VII., British Queen, Windsor Castle, Royal Kidney, Sensation, Evergood, Langworthy, Factor, Scottish Triumph, Eldorado, Duchess of Cornwall, Northern Star, Sir John Llewellyn, Midlothian, Radium, Express.

**All at 6s. 6d. per case.**

TERMS:—CASH WITH ORDER. Drafts payable BARCLAY & Co., Bankers, Wisbech or London, England.

ADDRESS IN FULL—

**J. W. CROSS,** OLD GRAMMAR SCHOOL,  
**WISBECH, ENGLAND.**

# **PERIODICALS . .**

*Relating to . .* **FARMING AND AGRICULTURE.**

# **1909.**

Avoid disappointment in receiving your Newspapers and Magazines promptly, by placing your order **AT ONCE**. Get a Copy of **OUR LIST** and **SAVE MONEY**.

**LISTS SENT FREE ON APPLICATION.**

—THE—

**"Times" Printing and Publishing Co., Ltd.,**  
222, Church Street, and Chancery Lane, Pietermaritzburg.

## **Stud, Stock, and Farm.**

**RATES OF CHARGES.**—20 words for 3 months, 3s. 30 words for 3 months 4s. 6d. 40 words for 3 months, 6s. Intending advertisers are requested to communicate with the Publishers direct.

### **STUD and STOCK.**

**P. D. KIMBER, MARITZDAAL, THE DARGLE.**—Breeder of Yorkshire Coach Horses, Cleveland Bays, Hackneys, and Pure Breed Shetlands. Stallions, Mares, Young Stock, Saddle Horses, Remounts and well-matched Pairs always on sale. Young Horses selected privately trained to saddle or harness to suit purchasers. Also Breeder of Shorthorn Cattle.

**P. OTTO, J.P., SOMERVILLE, RIET VLEI,** Breeder of Pure-Breed FRIESLANDS, RAMBOUILLET RAMS, AYLESBURY DUCKS, DORKINGS, AMERICAN BRONZE TURKEYS.

**WILLIAM WOOD, "WOODFIELD" STUD FARM, NOTTINGHAM ROAD.**—Breeder of Pedigree and Grade South Devon Cattle (heavy milking strain). Milk register kept. Young Bulls for sale. Also Shropshire Down Sheep (prizes won last season included a championship open to all breeds).

**PURE-BRED MIDDLE WHITE YORKSHIRE PIGS** for Sale; Boars and Yelts always on hand.—**C. HINGESTON,** Sutherlands P.O., near Maritzburg.

### **POULTRY.**

**BUFF ORPINGTONS,** Silver and Golden Wyandottes, Black Minorcas. Won over 200 prizes in two seasons. Eggs for sitting, 15s. per sitting of fifteen (carriage paid). Cockerels from 10s. Correspondence invited.—**MRS. R. F. DOTT,** Kenilworth, Kimberley, C.C.

### **FOR SALE.**

**ORANGE PLANTS.**—Natal Victoria, Natal Victoria Seedlings, and other varieties.—**D. BROWN,** Darnall.

### **WANTED.**

**BONES AND FAT;** any quantity. Best prices given.—Apply, **WEBSTER,** Bisley.

### **SITUATIONS WANTED.**

**WANTED** by young man Situation on farm. Experienced both with Stock and Agriculture; good character and references.—274, Bulwer Street, Pietermaritzburg.

## Index to Advertisements.

|                                      | PAGE.   |
|--------------------------------------|---------|
| Agricultural Pests, etc,             | 18      |
| Barfield, George, & Co.              | 7       |
| Bifurcated & Tabular Rivet Co., Ltd. | iv.     |
| Bovril                               | 10      |
| Brown, D.                            | 28      |
| Clarke Bros. & Brown, Ltd.           | 24      |
| Cooper, Wm., & Nephews               | viii.   |
| Cotts, Wm., & Co.                    | v., vi. |
| Cross, J. W.                         | 27      |
| Cyclone Gate & Fence Co., Ltd.       | 21      |
| Dott, R. F.                          | 28      |
| Dunn, W., & Co.                      | 16      |
| Elgie & Emerson                      | 22      |
| Gradwell, M. W.                      | iv.     |
| Gradwell, W. B., & Sons              | iv.     |
| Hayne & Co.                          | 9       |
| Henwood, P., Son, Soutter & Co.      | 15      |
| Hingeston, C.                        | 28      |
| Hirsch, L., & Co.                    | 9       |
| Holmes, Chas. W.                     | 1       |
| Hunt, Leuchars & Hepburn, Ltd        | 17      |
| Keeling Agency, Ltd., The            | 3       |
| Kimber, P. D.                        | 28      |
| Little's                             | 10      |
| Lennon, Ltd.                         | 4       |
| Lyle Brothers.                       | 13      |

# INDEX TO ADVERTISEMENTS.

|                                         | PAGE.                 |
|-----------------------------------------|-----------------------|
| Malcomess & Co., Ltd.                   | (Cover—back, inside)  |
| Mason & Son                             |                       |
| Matabele Reefs & Estates Co., Ltd., The | 23                    |
| Mayhew, John                            | 17                    |
| McCrystal & Harkness                    | 13                    |
| Merryweather, J., & Sons                | 13                    |
| Michelmore, Alfred                      | 3                     |
| Molassine Co., Ltd., The                | 2                     |
| Monhaupt, G., & Co.                     | 22                    |
| Natal Direct Line                       | 14                    |
| Natal Mill Elevator Co., The            | 21                    |
| Natal Soap Works, Ltd.                  | 5                     |
| North, G., & Son                        | ii.                   |
| Otto, P.                                | 28                    |
| Peters, J. A.                           | 25                    |
| Raw, J., & Co.                          | iii.                  |
| Reeve. H. W., & Co.                     | 14                    |
| Riekie & Co.                            | 23                    |
| Simmons, P. D.                          | (Cover—back, outside) |
| South African Fertilizers Co., The      | i.                    |
| Steel Murray & Co.                      | 12                    |
| Stephan's                               | 18                    |
| Stewart & Lloyds                        | 19                    |
| Wattle Extract Co., The                 | 7                     |
| Webster                                 | 28                    |
| Wilson, J. M.                           | 23                    |
| Wood, William                           | 28                    |
| —, 274, Bulwer Street                   | 28                    |



G30.5  
NA  
v.11<sup>12</sup>

# THE NATAL AGRICULTURAL JOURNAL

## Of Special Interest :

THE RAINFALL IN NATAL.

THE FIBRE INDUSTRY.

INTER-COLONIAL AGRICULTURAL CONFERENCE. 1908.

IRRIGATION IN NATAL.

A NEW SPRAY-PEN.

GRADING WATTLE BARK FOR EXPORT.

SUGAR CANE CULTIVATION.

Notes and Comments.—The Markets.—Exchange Reviews.—

Gardening Notes.—Weather, Crops and Live Stock, etc., etc.



PRINTED AND PUBLISHED FOR THE DEPARTMENT OF AGRICULTURE  
BY TIMES PRINTING AND PUBLISHING COMPANY, LTD.,  
PIETERMARITZBURG.

## SUBSCRIPTION :

**FIVE SHILLINGS** per annum (in advance), post free.

*It is hereby notified that all matter contained in the  
Natal Agricultural Journal  
is protected by Copyright. Newspapers desirous of  
republishing any articles may do so provided the usual  
acknowledgment be made.*

---

The Journal may be obtained from the Publishers, THE TIMES PRINTING AND PUBLISHING COMPANY, LIMITED, MARITZBURG, NATAL, upon payment in advance at any time of an Annual Subscription of 5s. With the exception of the Portuguese Colonies, the Journal is franked to all parts of South Africa. Postage to England, 2s. 6d. per Annum extra. Business Communications to be addressed to the Publishers.

The Journal is issued on the last Friday of every month.

Literary Communications to be addressed to the Editor, "Agricultural Journal," Department of Agriculture, Maritzburg.

Matter for advertisements or alterations in standing advertisements must be sent to the Publishers not later than the 18th of the month.

ADVERTISEMENTS.

i.

---

# **S A F C O**

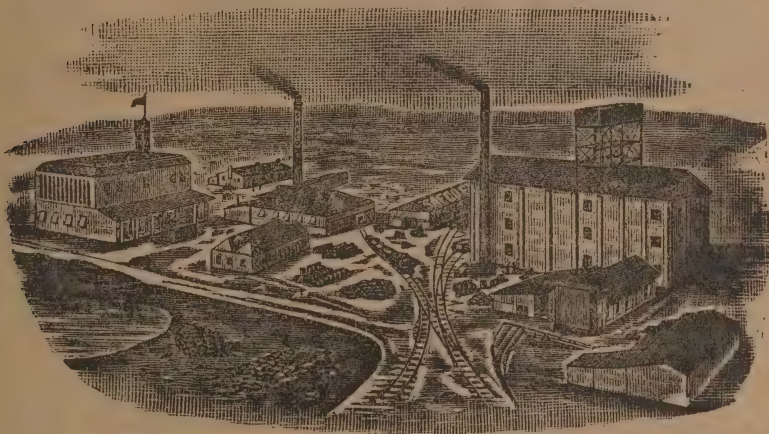
---

## **- FERTILIZERS -**

---

—ARE USED BY ALL—

**UP-TO-DATE and PATRIOTIC FARMERS.**



**SAFCO WORKS, UMBILO.**

**SAFCO Fluid Dip.**

**SAFCO Powder Dip.**

**SAFCO Cattle Lick.**

**Vaporite.**

---

### **THE SOUTH AFRICAN FERTILIZERS CO.,**

TELEGRAMS : **UMBILLO, DURBAN.** TELEPHONE : **No. 26, Durban.**  
'SAFCO, Umbilo.'



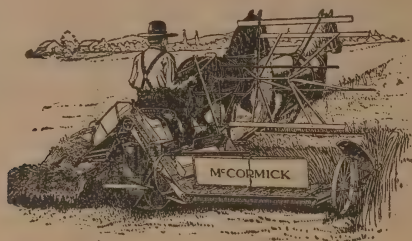
# WANTED, FARMERS

. . . TO TAKE NOTE. . .

---



TO enable you to produce the best results from your lands you must use the best of Agricultural Implements and Machinery, and these Implements and Machines should be the ones that have been tried and proved, such as sold by G. NORTH & SON, the old-



established firm of Agricultural Implement and Machinery Merchants, who are noted for their Agricultural Implements and Machinery. The fact alone that G. NORTH & SON have been 40 years in the trade, and hold the record of 137 Prize Medals awarded to them at Shows and Plough Trials, is the best assurance that they are the firm to supply the Farmers' wants.

---

## **G. North & Son**

P.O. Box 916, P.O. Box 127, P.O. Box 493, P.O. Box 126,

**DURBAN. MARITZBURG. JOHANNESBURG. PRETORIA.**

---

:O:

ILLUSTRATED CATALOGUE AND PRICE LIST FREE ON  
APPLICATION.



---

# Alex. Cross & Son's

(LIMITED)

## FERTILIZERS.

HIGH GRADE SUPERPHOSPHATE.

ORDINARY SUPERPHOSPHATE.

BASIC SLAG.

DISSOLVED BONE COMPOUND.

POTATO GUANO.

ROOT GUANO.

BONE DUST.

STEAMED BONE FLOUR.

All of Best Quality . .

. . Prices Moderate.

---

*WE GUARANTEE EXECUTION OF ALL ORDERS  
BOOKED WITH US FOR COMING SEASON. . . .*

---

**J. RAW & Co.,**  
**MARITZBURG**

SOLE AGENTS FOR NATAL.

## Friesland Pedigree Cattle.

**W. B. GRADWELL & SONS,  
Holmesdale, Bloemfontein.**

Breed from the purest strains of U.S.A. Fries Cattle: Light framed and hardy, quality and quantity of milk splendid, hard to beat anywhere in South Africa.

### PURE-BRED RED AFRIKANDER STUD CATTLE

of the purest strain, large frames and milking qualities a speciality. Prizes won at all S.A. Shows. Orders booked for young bulls delivered F.O.R. Bloemfontein.



## CURE AND PREVENTATIVE FOR WIRE WORM — IN SHEEP AND GOATS —

— AND —

### Preventative for Tapeworm in Lambs.

**BERT BOWKER'S CURE.** Trade Mark—  
A MERINO RAM. ®

### At Last! A Certain and Safe Cure and Preventative for Wire Worm in Sheep.

*Discovered by a South African Farmer.*

A Powder Dose that has stood a three years' test, and proved absolutely right before offered to sheep farmers.

—:O:—  
**THE COST IS 3s. per lb., SUFFICIENT TO DOSE 64 FULL GROWN OR 90 SHEEP OF MIXED AGES.**

Invest the trifle and save your sheep from this fatal disease. It is also a sure preventative for "Geel Ziekte."

—:O:—  
**All orders and enquiries receive the prompt personal attention of the Proprietor and Manufacturer,**

**Woodlands, P.O. Carlisle Bridge,  
CAPE COLONY.**

**M. W. GRADWELL.**

**WATTLE BARK**

**MEALIES**

**AND . .**

**NATAL PRODUCE.**

We are Buyers for Spot Cash.

**Wm. Cotts & Co.,**

**Natal Bank Buildings, DURBAN**

**Produce Merchants, Importers and**

**Exporters . . . . .**

**Telegrams : "COTTS," DURBAN.**

**P.O. BOX 80, DURBAN.**

**“ROSEBUD”**

---

**. . FLOUR**

---

**IS**

**THE**

**BEST**

**FOR HOUSEHOLD USE.**

---

**STRENGTH, WHITENESS AND QUALITY**  
**. . UNSURPASSED . .**

---

**== TRY IT! ==**

**. . Stocked by all Storekeepers . .**

---

**WM. COTTS & CO.,**

**— IMPORTERS —**

**P.O. BOX 80, DURBAN.**



# QUIBELL'S DIPS.

## **CATTLE PASTE DIP.**

The popularity of this famous Dip is still maintained. Its reputation for keeping Cattle and Horses in a healthy condition is known to almost every farmer.

## **SHEEP FLUID DIP (Non-Poisonous).**

The most efficient emulsifying Dip on the market, without exception. Thousands of gallons sold in the Colony annually.

## **SHEEP POWDER DIP (Poisonous).**

In cases containing 48 packets. Mixes readily, cures the SCAB, kills the parasites as they hatch from the egg; improves the wool.

## **DISINFECTANTS.**

### **KEROL.**

Awarded the Gold Medal for Disinfectants at the Franco-British Exhibition, London, 1908.

### **INFALLIBLE FLUID.**

A powerful but cheaper Disinfectant.

### **KEROL SANITARY POWDER.**

Guaranteed to be four times more powerful than a 15 per cent. Carbolic Powder.

*Please order your Dips and Disinfectants through  
your Merchant.*

Agents—

**A. J. KEELER & CO., Point, Durban.**

City Representatives—

**W. H. GRIFFIN & SONS, Hosking's Chambers, Exchange Lane, MARITZBURG,**

**FROM THE *CAPE***  
**TO THE *ZAMBESI***

# COOPER'S DIP

Will now be sold at every RAILWAY STATION TOWN

**AT ONE PRICE**

1s. 4d. per 25 gallon Packet,  
£2 12s. 6d. per 1,000 gallon Case; For Cash.  
Road Transport and Credit Extra.

**QUALITY GOOD AS EVER.**

**SOLD BY ALL STOREKEEPERS**

*Vol. XI., No. 12.*

*DECEMBER 24, 1908.*



THE  
NATAL  
AGRICULTURAL  
JOURNAL

---

---

Published for and Edited by the Department of  
Agriculture.

---

---

**Publishers :**

THE "TIMES" PRINTING AND PUBLISHING COMPANY, LIMITED.

—  
1908.





# CONTENTS.

|                                                                                | PAGE |
|--------------------------------------------------------------------------------|------|
| AGRICULTURAL CONDITIONS IN NOVEMBER: The Weather, Crops and Live Stock         | 1608 |
| AGRICULTURAL UNION, INTER-COLONIAL: Fourth Annual Congress                     | 1584 |
| AGRICULTURE IN THE IXOPO DIVISION: Public Meeting at Staartstown               | 1592 |
| ANALYSES, VACCINES, ETC., CHARGES FOR                                          | 1519 |
| APPLES FOR EXPORT                                                              | 1526 |
| BANANAS, PRUNING                                                               | 1539 |
| BREEDING SHEEP FOR MUTTON: New South Wales Experience: The Value of Southdowns | 1580 |
| BUTTER BOXES, INQUIRY FOR                                                      | 1520 |
| CANE CULTIVATION, SUGAR: Practical Information for Beginners                   | 1561 |
| CASTOR OIL PLANT FOR GREEN MANURING                                            | 1521 |
| C.I.F., MEANING OF                                                             | 1542 |
| COMMERCIAL INTELLIGENCE BUREAU: A New Institution: Facilities for Farmers      | 1529 |
| CORRESPONDENCE:                                                                |      |
| Wireworm in Sheep: F. C. G. Palmer.—Machinery at Shows: B. B. E.—              |      |
| Caustic Soda and Sulphur: Wm Cooper & Nephews                                  | 1605 |
| DEPARTMENTAL NOTICES:                                                          |      |
| Coal and Labour Returns                                                        | 1619 |
| Diamond Drilling                                                               | 1619 |
| E.C.F. Advisory Committees                                                     | 1625 |
| E.C.F. Brands for Infected Divisions                                           | 1621 |
| Employment Bureau                                                              | 1628 |
| Experiment Station Notices                                                     | 1633 |
| Government Abattoirs and Cold Stores                                           | 1624 |
| Laboratory, Government: Scale of Charges                                       | 1623 |
| Lungsickness and Scab, Farms under Licence for                                 | 1620 |
| Publications Issued by the Department                                          | 1635 |
| EAST COAST FEVER REGULATIONS                                                   | 1524 |
| EXPERIMENT FARM REPORTS                                                        | 1597 |
| FARMERS' ASSOCIATIONS, EXECUTIVES OF                                           | 1629 |

# CONTENTS—continued.

|                                                                                             | PAGE |
|---------------------------------------------------------------------------------------------|------|
| FIBRE INDUSTRY, THE. By Leonard Acutt, J.P., Tongaat                                        | 1540 |
| FODDER PLANT, A NEW                                                                         | 1522 |
| FORESTS, CROWN: Conservation Report for November                                            | 1601 |
| GARDENING NOTES FOR JANUARY: By W. J. Bell, Nurseryman, Seedsman and Florist, Maritzburg    | 1603 |
| GASOLINE ENGINES ON HARVESTERS                                                              | 1528 |
| GRAIN WEEVIL, FIGHTING THE                                                                  | 1560 |
| HÆMORRHAGIC SEPTICÆMIA OR PASTEURILLOSIS IN CATTLE. By F. Hutchinson, D. V. Surgeon, Dundee | 1534 |
| HARVESTERS, GASOLINE ENGINES ON                                                             | 1528 |
| HORSESICKNESS. By H. Watkins-Pitchford, F.R.C.V.S., F.R.S.E.                                | 1543 |
| HORSES, MOLASSES FOR                                                                        | 1520 |
| INDIAN IMMIGRATION                                                                          | 1522 |
| IRRIGATION IN NATAL. By James Peniston, Weenen                                              | 1558 |
| IXOPO DIVISION, AGRICULTURE IN THE: Public Meeting at Stuartstown                           | 1592 |
| MAIZE STALKS, PAPER FROM                                                                    | 1525 |
| MANURING, GREEN; CASTOR OIL PLANT FOR                                                       | 1521 |
| MANURING, NOTES ON. By Arthur E. Dixon, F.G.S., M.E.                                        | 1567 |
| MARKETS, THE: South African and Oversea Notes and Prices                                    | 1611 |
| MEALIES—See "Maize."                                                                        | 1525 |
| MEAT INDUSTRY, HISTORY OF THE                                                               | 1523 |
| METEOROLOGICAL RETURNS                                                                      | 1618 |
| MILK CANS, RUSTY                                                                            | 1575 |
| MILK "STRIPPINGS"                                                                           | 1604 |
| MOLASSES FOR HORSES                                                                         | 1520 |
| MUTTON, EXPORT OF                                                                           | 1515 |
| MUTTON, BREEDING SHEEP FOR: New South Wales Experience: The Value of Southdowns             | 1580 |
| NOTES AND COMMENTS                                                                          | 1519 |
| POUND NOTICES                                                                               | 1622 |
| RABBITS, EXTERMINATING                                                                      | 1521 |
| RAILWAY RATES ON LUCERNE AND FORAGE                                                         | 1519 |
| RAINFALL IN NATAL, THE. By E. Nevill, F.I.C., F.R.A.S.                                      | 1531 |
| RETROSPECT AND PROSPECT                                                                     | 1518 |
| SPRAYING DEVICE, THE "NATAL." By H. Watkins-Pitchford, F.R.C.V.S., F.R.S.E.                 | 1576 |
| SUGAR CANE CULTIVATION: Practical Information for Beginners                                 | 1561 |
| TROUT BOOK ON                                                                               | 1533 |
| VACCINES, ANALYSES, ETC., CHARGES FOR                                                       | 1519 |
| WATTLE BARK, EXPORT OF: Question of Grading                                                 | 1569 |
| WEEVIL, FIGHTING THE GRAIN                                                                  | 1560 |





NATAL LAMBS FOR LONDON.  
Portion of Trial Shipment at Government Abattoirs, Maritzburg.



## The Natal Agricultural Journal.

### **Export of Mutton.**

---

IN time the Colony will begin to realise the situation as regards mutton. We are importing at the rate of some 900,000 lbs. of mutton per month; and increasing attention is being given to sheep-farming by farmers not only in Natal but all over South Africa. What will be the result? Undoubtedly a very serious glut, and at a no very distant date, too. The Government realises this, and no one more fully than Mr. Deane. The Minister is looking ahead, and in order to save the farmers from loss through considerably lower prices in the near future he is experimenting, with the assistance of enterprising farmers in the Midlands, in the export of lambs to England, in order to ascertain what market there is oversea for Natal mutton. As our readers are aware, an experimental shipment was made last year; but on that occasion the experiment was made at a disadvantage. The lambs were weaned and shorn, and consequently they had received a set-back in their development; but rather than lose the opportunity and have to wait a whole year it was deemed advisable to ship the lambs. The results, as all know, were encouraging; and this year Mr. Deane has been arranging for further experimental shipments.

Whilst there is undoubtedly a market oversea for prime quality mutton, there is this fact that must be fully recognised, namely, that the London market will not take anything but the best, and furthermore that, generally speaking, our lambs cannot be described as "the best" such as London requires. In other words, more attention must be given to breeding and feeding. We must know what are the best crosses. And to obtain the best cross we must know what are the best breeds for our pur-

pose. The Downs are undoubtedly among the best mutton breeds to be found; whilst in the merino we have a fully acclimatised breed of good woolled sheep. A cross of, say, the Southdown and the merino might thus suit our requirements. Then again there is the Border-Leicester, which is an excellent all-round sheep, both for mutton and wool. This breed crossed with the merino produces a fine lamb for the English market, as Australian experience has shown. Some years ago some experiments were conducted at the Bathurst Experimental Farm with the object of obtaining expert opinion from London as to the best cross for that market. The lambs sent were from  $4\frac{1}{2}$  to  $5\frac{1}{2}$  months old, and the "tegs" from  $7\frac{1}{2}$  to  $8\frac{1}{2}$  months (really weaners), and were composed of first and second crosses. The first crosses (really half-breds) were by Shropshire, Southdown, Border Leicester, Lincoln, Romney Marsh, Dorset Horn and Cheviot rams on merino ewes. As regards the shipments of first crosses, the decision of the experts was that the lambs from half-bred Southdown ram on merino ewes, and from the Leicester rams on merinos, were the best. The experts specially advocated second-cross; and taking the ewes as a criterion, they classed all those in the consignment as prime quality, with the exception of the Lincoln and Dorset Horn, which were termed "fair." As regards the order in which the second cross stood, the experts put those by the Southdown ram—English Leicester as first; English Leicester ram—Cheviot ewe, second.\* Again, as will be seen in an article elsewhere in this issue, at the Wagga Experiment Farm, New South Wales, first-cross Lincoln-merino ewes have given the most satisfactory results as dams; and so far the best lambs for market have been obtained from a cross of these ewes with Shropshire rams: "The stock resulting from this cross are very shapely animals, making very rapid growth, dressed weights of 40 to 50 lbs. at 4 to 5 months being very numerous. . . . Under adverse conditions their loss of weight has been less than that of any other cross-breeds, and their gain under hand-feeding in a season of drought has been greatest. In fact in one feeding test in which every other breed lost weight the Shropshire x Lincoln-merino showed a fair gain." Crosses of Border-Leicester and Dorset Horn rams on Lincoln-merino ewes also produced excellent lambs.

We quote these experiments to show the necessity for study in the matter of breeding. The results are suggestive and will serve to form a basis for experimental crossing. Crossing is essential, but it must be carried on on intelligent lines.

But breeding is not everything. A glance at the report submitted by the London experts consulted in connection with the Bathurst experiment referred to above will prove instructive and will draw attention to several points which have to some extent been neglected in the past. The experts insisted, in the first place, that "if top prices are to be obtained,

\* See Alfred Hawkesworth's *Australian Sheep and Wool*. Second Edition, pp. 346-347.

the lambs must be milk lambs." In connection with this the experts were asked "whether lambs which have missed being ready as 'milk' lambs, should be fully fattened and sold as 'tegs' from 7 to 12 months old?" and they strongly recommended that this course should be adopted. They advised making them prime, and sending them as "tegs" from 42 lbs. to 50 lbs.; the difference in price in favour of "tegs" of this weight from prime, full-weight sheep would, they said, be from  $\frac{1}{4}$ d. to  $\frac{1}{2}$ d. per lb. Another point insisted upon was the absolute necessity for the London market, "that they be full of condition, well covered, and prime fat when frozen." Further, "they should be closely graded and even as a lot in quality and weight." The minimum weight for lambs is fixed as low as 26 lbs., but only if the lamb is thoroughly well covered and of prime quality (28 to 34 lbs. is considered a desirable weight for milk or sucking lamb). The maximum weight is fixed at 42 lbs.; over that weight animals are classed as "tegs," at a reduction of  $\frac{1}{4}$ d. to  $\frac{1}{2}$ d. per lb.

These, then, are some of the points which must be considered by intending exporters; and it is apparent that we must make up our minds to attend carefully to the requirements of the London market if we are to make a success of the export of mutton. And export we must, else we shall ere long be faced with low prices consequent upon a glutted local market, and the result will be loss to sheep-raisers and serious injury to a promising industry. We trust that sheep-farmers will consider the situation and realise, even apart from any other consideration, the possibilities the Colony has in the matter of the exportation of mutton if only due attention is given to the requirements of the London market. The export of mealies has meant the bringing into the Colony of thousands of pounds of fresh wealth, and there seems no reason why we should not take advantage of our mutton resources and build up a flourishing export trade in that commodity also.

---

Farmers in outlying districts are reminded that, by the inauguration of the produce parcel post rate, they are now in a position to obtain young trees from Cedara with very little inconvenience. Several farmers have obtained trees in this way, with very successful results. Those desirous of obtaining tree seedlings should write to the Chief Afforestation Officer at the Central Experiment Farm, Cedara. Particulars as to prices, etc., will be found among the Experiment Station Notices at the end of each issue of the *Journal*.

## ***Retrospect and Prospect.***

---

WITH this issue we conclude another volume and reach the end of another year. Last Christmas, in a brief retrospect, we were able to record progress, and this year again the upward tendency has been manifest. The commercial depression which has so long been upon us is slowly but surely lifting, and through the rifts in the dark cloud are discernible many sure signs of prosperity in the near future.

It is almost a truism now that we have in the past spent more than we have earned and that this has been one of the main causes of the depression from which we are only now emerging; but in view of this fact the increasing exportation of Natal produce is one of the healthiest signs we have that at no distant date we shall be a prosperous—we will not say just yet a wealthy—country with a prosperity based upon the stable foundation of the soil. The exportation of mealies is going up by leaps and bounds, and the area under this staple is being greatly extended; the citrus fruit industry is shortly to become an important source of wealth to the Colony, as the results of last season's experiment prove; the wattle industry continues on the steady upward grade which has characterised it since its inception; the production of sugar is increasing; sheep-farming is engaging more and more attention and the production of wool is steadily increasing, and concurrently we have excellent prospects of establishing our mutton in the London market provided sufficient care is given by farmers to the raising of lambs; there is a promise of an export trade in potatoes, and also in apples and other summer fruits, being opened on a considerable scale in the immediate future, and the Colony has great possibilities in these directions. These are some of the directions in which the activities of the Colony in the matter of the export of agricultural produce are being turned, and the prospects of the New Year that is close upon us are accordingly full of promise. There is just one dark cloud that hides somewhat the bright light of the future, and that, of course, is East Coast Fever. About this plague the less said the better at this season of the year, and there is no need to dwell on its depressing effects upon farming. But there is this we would say, that our farmers could hardly show more courage than they are doing in their fight against this disease. In spite of the plague, farming is going ahead surprisingly, and hope and belief in the future are everywhere manifest except in the minds of a few habitual pessimists. When once we have shaken off East Coast Fever the progress which the Colony will make will be very rapid, since during this evil visitation we have learned many things, and the commercial depression, too, has served to make the Colony "buckle to" and show what she is made of.



So far as East Coast Fever is concerned we must hope for the best; but in every other direction the prospect is bright and we feel that we have before us a year that will be full of great things for the Colony. We tender our readers our best wishes for a happy New Year and for all prosperity and success during the coming year, and trust that we shall see as great progress during 1909 as we have experienced during the year of which we are now at the close.

---

### **Notes and Comments.**

---

AMONG the illustrations in this issue are four giving further views of the newly-invented chain tractor, or "Caterpillar Engine," referred to in a recent issue of the *Journal*. Only two of these engines have so far, we hear, been made; and it is difficult yet to say whether the system will ever come into general use. The advantages of the chain traction system on marshy and sandy soil will be evident from the pictures which we publish of engines in the act of crossing such treacherous areas, and it is very possible that the system will come into wide vogue for such purposes at any rate. The driving machinery, however, is stated to be very little more complicated—with the exception of the chain track, which is, of course, the special feature of the system—than that of an ordinary traction engine, although the machine has a cumbersome appearance. Many tests will have to be made, and the cost will probably be no small factor in the question of the widespread adoption of the system.

---

### **Charges for Analyses, Vaccines, etc.**

At the end of the issue, among the Departmental notices, will be found a scale of charges which have been fixed for analyses, sera, vaccines, etc. Correspondence in connection with analyses, and requests for vaccine, sera, etc., should be addressed to the Director, Government Laboratory, Allerton, Maritzburg.

---

### **Railway Rates on Lucerne and Forage.**

The General Manager of Railways announces that a revised special rate of 19s. per ton will come into force on the 1st January next for South African lucerne and forage (of not greater value than £3 15s. per ton on rail) carried on the railway from Weenen to Maritzburg and Durban. This special rate includes cartage. Lucerne carried at this rate is at owner's risk; and in the case of Maritzburg the minimum charge is as for 3 tons.

### ***Inquiry for Butter Boxes.***

We have received an enquiry from a correspondent for cheap, light and strong butter boxes, to hold 2, 4, 6, or 8 lbs. of butter—at a price, that is to say, reasonable enough to dispense with the “returned empty” business. We have made enquiries, without success, among Maritzburg firms, and we shall be glad to place anyone who may have such boxes for disposal in communication with our correspondent. There seems to be a need for light but strong butter boxes that are cheap enough to use once only. In the United States “bottles,” or cylinders, are now being made from paper for the carriage of milk, and these are made so cheaply that users can afford to use them once only. Something similar, made for butter, would doubtless sell well in Natal.

---

### ***Molasses for Horses.***

We have referred on several occasions to the value of molasses as a stock feed, and in our March issue we published a lengthy article pointing out the advantages of mixing it with the feed of various kinds of stock. Writing with reference to the feeding of molasses to horses and mules, an American contemporary recommends the feeding of about 15 lbs. per mule per day. The molasses is dumped into shallow tanks and with this is mixed cut hay (about 2-inch lengths). In mixing the hay with the molasses so as to make a homogeneous mass there are added two pounds of cotton seed meal per mule per day. This amount of cotton seed meal can be safely fed to mules per day and it contains more nitrogen than three times the same quantity of oats. As much as three pounds of cotton seed meal per mule per day have been fed without any ill results. Two pounds per mule per day of this very concentrated feed stuff is considered far within the limits of safe feeding. The cut hay, sufficient to absorb or entangle the molasses, amounts to about 15 pounds per mule per day, in addition to the weight of the molasses and meal, or some 32 pounds altogether of this feed per mule. It may be fed in shallow tanks, about 15 inches deep. The shallower the tanks are the better, as in that way the mules are less liable to get their faces and necks soiled with the molasses. It is found that when molasses is mixed in this way with cut feed the mules will consume more pounds of molasses per day than they would consume in any other way. The presence of the fibre of the hay enable them to chew the feed, which is done. “We have, however,” our contemporary says, “fed thousands of barrels of molasses directly from open tanks, without any admixture with water, hay or cotton seed meal. It has seemed somewhat queer in the summer time, to see mules coming in from the field, apparently tired, and when turned loose in the stable lot they frequently go to the molasses tanks first in preference to the water tanks.”

---

**Castor Oil Plant for Green Manuring.**

According to the *Agricultural News* (Barbados), a crop of castor oil plants was lately grown in a field at Molyneux Estate, St. James, Barbados, for green dressing purposes, and a sample plant has been analysed at the Government Laboratory of the island. From the statement of analysis, it appears that the total weight of the crop per acre (1,210 holes) was 6,655 lb., containing 2,323 lb. (34.91 per cent.) of organic, or humus-forming, material. The amount of nitrogen added to the soil by the crop is shown to be 33.3 lb. per acre, of phosphoric anhydride 21.3 lb., and of potash 53.2 lb. per acre.

---

A better idea of the actual value of castor oil plants for green manurial purposes will be obtained on comparison of the above figures with those relating to various leguminous crops grown for the same purpose in experiments carried out at Waterford plantation by the Imperial Department of Agriculture for the West Indies in 1900. The crops under trial included woolly pyrol, cowpeas and Bengal beans. While, as already mentioned, the amount of organic matter yielded by the castor oil plants was 2,323 lb., that added to the soil by green woolly pyrol was 2,069 lb., by cowpea vines 2,730 lb., and Bengal beans 3,962 lb. The great difference, as might be expected, lies in the amount of nitrogen incorporated into the soil as the result of cultivating castor oil plants and leguminous plants such as the above. While the castor oil crop contained 33.3 lb. of nitrogen per acre, the woolly pyrol crop yielded 48 lb., the cowpeas 70 lb., and the Bengal beans 120 lb. In the case of the leguminous crops, too, a considerable quantity of this nitrogen would be obtained from the atmosphere, while the castor oil plant merely returns to the soil what it has previously taken from it.

---

**Exterminating Rabbits.**

"1. Rabbits are polygamous; (2) because of being polygamous they have become a pest; (3) this polygamy is chiefly caused by the use of the spring trap and poison cart; (4) it is impossible for them to be a pest and at the same time polyandrous." So writes Mr. W. Rodier, in an interesting little pamphlet we have received on "The Rabbit Pest in Australia"; and this quotation gives the key-note to the system of rabbit extermination which he has evolved and is advocating. The position, as propounded by Mr. Rodier, is briefly this: The spring trap and poison carts, and most other plans, kill more males than females. This causes the rabbits that are not caught to live in a polygamous state; because of being polygamous the females are very much more prolific than they otherwise would be, and produce more females than males. Consequently anything that kills the males increases the pest, and acts in the same way as the proverbial snowball or the notorious chain letter—the longer it is



continued the greater becomes the volume of the rabbits; and that is why the rabbits have spread from Southern Victoria well into Queensland and West Australia, in spite of the hundreds of thousands of millions that have been killed by the droughts. Mr. Rodier considers that the remedy is, to make the rabbits polyandrous, and to do this only such plans as catch the rabbits alive should be used, then kill all females and liberate all males. By doing this the males will persecute the females that are not caught, and prevent them from breeding. "They will also kill what young ones that may be born, and when they largely exceed the females they will worry the remaining ones to death, and so by this means all the breeders are got rid of, and when that is done the males will die off by old age and their natural enemies, and so complete and entire extermination is brought about without any fear of disease or other drawbacks, and at a small cost." The whole idea seems very feasible and is worthy of a thorough trial, which it will doubtless receive in such a rabbit-infested country as Australia is. Doubtless the system could be applied to the extermination of other pests also.

---

### **A New Fodder Plant.**

Mr. J. M. B. Connor, the Dairy Supervisor of the Victorian Department of Agriculture, has drawn attention to a new fodder plant—the "Chou Moellier." He describes it as "a valuable summer and winter fodder plant suitable for stock of all kinds." It belongs to the Kale family of plants, and grows 4 to 5 feet high, yielding a wealth of succulent foliage. The stalks are solid and fleshy, and have not the woody or fibrous texture of the ordinary cabbage. The leaves can be stripped off, about five times during the season, and the whole plant can be chaffed and fed to the animals with absolutely no waste. Mr. Connor has experimented with a small crop of this new fodder plant, and he finds it "a rapid and vigorous grower, highly nutritious and eagerly sought after by stock." He states that it is both frost and drought resistant; in his experiment it kept growing vigorously without artificial moisture or manure of any kind since planting. The plant yields a large amount of green feed during winter time, and on that account is recommended particularly to dairy farmers. Mr. Connor states that one pound of seed sown in prepared seed beds will furnish enough young plants for transplanting to sow about one acre.

---

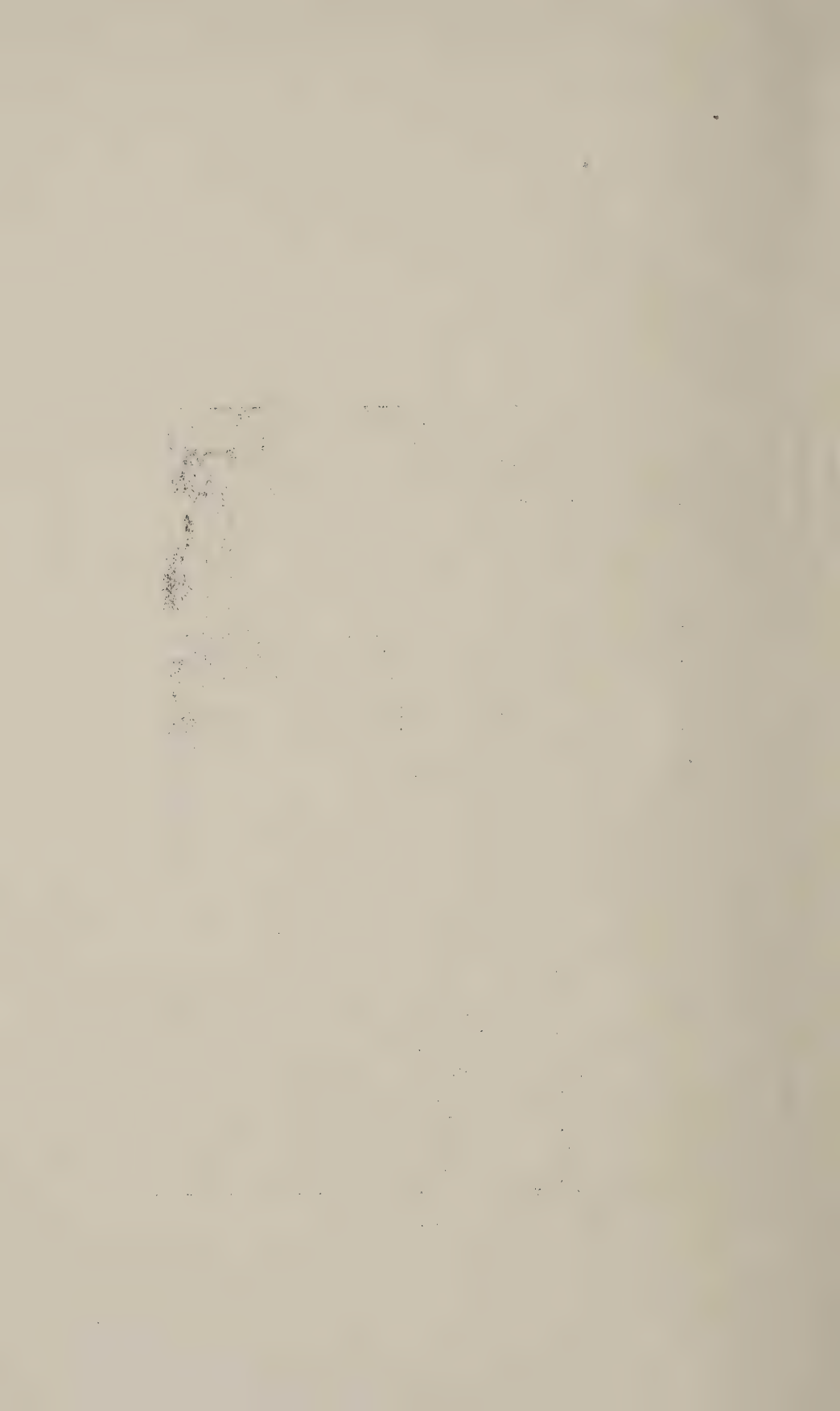
### **Indian Immigration.**

A Commission, consisting of Lieut.-Colonel Friend Addison, Hon. W. F. Clayton, M.L.A., and Messrs. C. H. Haggart, M.L.A., F. A. R. Johnstone, J.P., M.L.A., James Schofield, M.L.A., Dan Taylor, M.L.A., and James Williamson, has been appointed for the purpose of "considering and advising upon the question of Indian immigration to Natal."





GOVERNMENT ABATTOIR AND COLD STORES.  
A View of the Cattle Pens. (The Abattoir is the low wood-and-iron building; a portion of the  
Cold Stores is seen to the right.)



The attention of the Commission has been directed specially to the following points:—(a) The advisability of discontinuing or restricting the immigration of indentured Indians to Natal; (b) the nature of the alterations, if any, that should be made in the laws relating to the establishment of the Indian Immigration Trust Board and other Acts and Regulations affecting Indian immigration, so as to secure more effectual control by Government of Indians introduced into the Colony since the passing of the Act No. 17, 1895, whether under any present or future system of indenture; (c) the existing laws and regulations as regards the re-indenture of Indian immigrants and the question whether the present rate of pay as fixed by law operates adversely against the renewal of indentures; (d) the substitution of an alternative labour supply from within Central or South Africa in the event of its being decided to suspend or abolish the further introduction of Indian immigrants into Natal. In considering this question regard should be had to the following points: The climatic conditions of the coastal and inland portions of the Colony; the continuity and reliability of labour; and the requirements of the different classes of industry carried on in Natal; (e) the medical supervision of indentured immigrants and the control by Government of the Indian Medical Officers; and (f) the question whether the introduction of Indian immigrants has in the past operated in the direction of displacing the aboriginal native and thereby curtailing his field of labour.

### ***History of the Meat Industry.***

A lecture on the history of the meat industry was given at the College of Agriculture, Edinburgh, on November 2nd, by Mr. Loudon M. Douglas, of Edinburgh, who is well known as a writer and lecturer on the subject of foods and the various branches of industry associated with the meat trade. There has been a strong effort made within the last year or two to place the meat industry, in common with other skilled occupations, upon an academic basis, and this series of lectures is the first step towards accomplishing that desirable end. The occasion of the lecture was the inauguration of a winter course, which will be delivered by Mr. Douglas at the same place. These lectures will deal with cattle markets, abattoirs, refrigeration, the meat supply, laws affecting the meat trade, meat inspection, diseases of animals used for food and their detection, pickling and curing of meats, the manufacturing of small goods, etc., etc. It has also been arranged that a number of excursions to different places in connection with the meat industry will be made so as to study the actual practice as carried out.

In the opening lecture, Mr. Douglas referred to the great importance of the subject and the total absence of any systematic method of teaching it. The meat industry in all countries had sprung up in the

most casual way and its origin rests in obscurity. The ancient laws on the subject were now obsolete, but no doubt called for at the time they were enacted. The substances obtained from a bullock are numerous and are applied in many departments of industry. It is necessary, therefore, that we should know more about them. No doubt the food used by various nations suited their habits, but there must be some law governing the whole. Various specific instances of curious customs were given by the lecturer, who also illustrated his points with a wide range of lantern slides.

In so far as the history of the meat industry is concerned Mr. Douglas traced it from the earliest times to the present day, and made many interesting references to old laws and customs. The Trade Guilds were specially interesting and they had been strong in Scotland, but their influence was also extensive in other countries. They had been done away with, however, and were now represented, so far as the United Kingdom was concerned, by a National Federation of Meat Traders' Association, whose duty it was to foster and develop technical education throughout the trade. The lecture was attended by the President of the Master Butchers' Association of Edinburgh and all the officers, who were accompanied on the platform by Professor Wallace, of Edinburgh University, and Judge Macpherson, who occupied the chair. The proceedings were very enthusiastic throughout and the lecture was much applauded, as were also the appreciative speeches which followed its delivery.

### **East Coast Fever Regulations.**

The Minister of Agriculture has ordered the branding of all cattle in the Camperdown Division (with the exception of cattle on Native Locations and Native Mission Reserves) and on certain farms in the Impendhle Division. (Government Notices Nos. 681 and 391, respectively). The brands to be used in the Camperdown Division are as follows: In Sub-division No. 1, "D1" on right shoulder; in Sub-division No. 2, "D2"—the "2" inverted—on right shoulder; in Sub-division No. 3, "D3" on right shoulder; in Sub-division No. 4, "D4" on right shoulder, with the exception of the cattle on the farms "Slang Spruit" and "Lilliefontein," west of main line of railway, which are already branded "TC"; in Sub-division No. 5, "D5" on right shoulder; in Sub-division No. 6, "D6" on right shoulder; and in Sub-division No. 7, "D7" on right shoulder. The boundaries of the Sub-divisions are given in the Government Notice, but space does not permit of our repeating them here. The Government Notice in question (No. 681) was published in the *Government Gazette* of the 1st December. As regards the Impendhle Division, all the cattle on the following farms are to be branded "I.D." on the left shoulder:—Nooitgedacht, Remainder, that portion lying



on the north side of the Natal-Cape line; Gunzenhausen, that portion lying on the north of the Natal-Cape line; Moor, any portion thereof, or any subdivision thereof, lying on the north side of the Natal-Cape line; and Langsyde.

---

In connection with these orders for the branding of cattle, attention is specially drawn to Section 13 of Act No. 32, 1903, which provides that, on failure to comply with the orders, the same may be carried out by Government at the cost of the said owners or persons in possession of or in charge of cattle, and to Section 20 of the said Act, which provides punishment for disobedience of the orders with a fine not exceeding £100, or to imprisonment, with or without hard labour, and with or without the option of a fine, for any term not exceeding six months.

---

By Government Notice No. 711, dated the 9th December, the Minister of Agriculture has ordered that, from and after the 20th December, no movement of cattle within the Magisterial Division of Richmond is to be allowed. Notwithstanding this prohibition, however, healthy cattle may be moved from one place to another within the Division, for immediate slaughter, on permit granted by a member of the Advisory Committees for the Division, or by a person appointed by the Committees as a Permit Officer, and such removal shall be made within the time and according to the directions contained in the permit, and not otherwise. Permits for the removal of slaughter cattle by rail from any Railway Station in the Division must be obtained from the Minister of Agriculture, and will be issued subject to such conditions as the Minister may see fit to impose. In terms of Act No. 32, 1903, any person disobeying this Order is liable to a fine not exceeding £100, or to imprisonment, with or without hard labour, and with or without the option of a fine, for any term not exceeding six months.

---

### **Paper from Maize Stalks.**

We learn from the *Scientific American* that the chemists of the United States Department of Agriculture have at last solved the problem of how to turn into paper the millions of tons of mealie stalks wasted annually. After years of experiment, the department now reports that the vast quantity of material heretofore considered valueless and destroyed every year by the farmers of the country can be utilised, thus saving much of the remaining wood reserve of the United States, and bringing about the manufacture of paper from an annual crop. The first practical samples of this new paper were manufactured in Washington, and consist of five grades in five colours. One grade is dark grey, thick and heavy, resembling parchment. There is a lighter grade of the same character, two shades of yellow and one of white. The latter are manufactured from the hard outside part of the mealie stalk, and

the former from the interior or the pith. The yellow grades have much longer fibre, and resemble paper made from cotton rags or linen, being soft to the touch and pliable, and appearing to have been made from material of entirely different character from that used in the grey product.

In the process of the experiments which resulted so successfully, the "soda-cooked" method was employed. This process many manufacturers of paper have found to be the best treatment for the finer grades of wood-pulp paper. The cornstalk pulp can be cooked in from two to two and one-half hours, as against twelve to fourteen hours needed in treating wood. It is claimed that even at the present primitive stage of experimentation, cornstalk paper can be made almost as cheaply as wood-pulp paper, though the latter industry has been developing for the past half century. The belief is freely expressed by the scientists who have been conducting these experiments, that when proper machinery is brought out, and the farmers grow cornstalks in localities where they can be moved cheaply to the mill, the cost will be fully fifty per cent. less than paper now manufactured from wood. No special growth of mealies is required, as the experiments have shown that any kind will answer the purpose of manufacture. The kind used, however, was the common Virginia and Maryland field maize, but that grown anywhere, it is stated, will do as well.

### **Apples for Export.**

On various occasions the possibility of developing an export trade in apples from Natal to London has been referred to, and in the minds of many such an export could be successfully established. The Commercial Agent in London, in a recent communication, expresses the opinion "that apple-growing for oversea trade would prove a profitable investment and that sound business could be done in England in the varieties packed and exported with such great success by Canada, Tasmania and Australia." Mr. Harrison has been studying the London market, and his opinion expressed above is the outcome.

The most important consideration at the outset is, of course, the question, "What are the kinds most favoured on the markets of the United Kingdom?" And as a partial answer to that question we have before us a list, supplied by the Commercial Agent, of the chief varieties of apples shipped to England from Tasmania and Australia. These are as follows:—*Tasmania*: New York Pippin, Sturmer Pippin, French Crab, Adams Pearmain, Scarlet Pearmain, Scarlet Nonpareil, Ribston Pippin, Cox's Orange Pippin, Wellington, and Blenheim. *South Australia and Victoria*: Cleopatra, Rome Beauty, Jonathan, Sturmer, Bismark, London Pippin, Dunn's Seedling, Monroe's Favourite, and Strawberry Pippin. A large firm of distributors of Tasmanian apples strongly

recommend Cox's Orange Pippins, which they consider one of the best-paying apples to grow. This apple, they state, makes the highest price on the London market. Canada has tried to grow them, but without success; Australia, on the other hand, grows them with great success. They also recommend Blenheim Orange, Ribstons, and Scarlet Nonpareils. With the facilities which the Government is giving this year for the export of summer fruits there will doubtless be a number of growers who will try apples, and the list of varieties which we have given above will consequently serve as a useful guide.

With the exception of Wellingtons, Bismarks, and Strawberry Pippins, all the varieties mentioned above, as well as many others, are being tried on the Government farms; and it may, in fact, be of interest to give here a list of all the varieties of apples which are being tried. They are as follows:—Adam's Pearmain, Akero, Alfriston, Allen's Everlasting, Allington Pippin, Ann Elizabeth, Baldwin's, Barnack Beauty, Bawmann's Red Reinette, Bawin's Reinette, Beauty of Bath, Beauty of Kent, Bedfordshire Foundling, Belle Pointoise, Ben Davis, Benoni, Betty Greenon, Bleinheim Orange, Bloomer Rockwood, Boston Russet, Baddock's Nonpareil, Branley Seedling, Buckingham, Buncorn, Baxter's Pearmain, Calville Red Rouge, Calville d'Oullins, Cardinal, Celine, Chelmsford Wonder, Charles Ross, Claygate Pearmain, Cleopatra, Colville Blanc, Cox Orange Pippin, Commerce, Count de Wick, Cockle Pippin, Cornish Guilflower, Colonel Vaughan, Cornish Aromatic, Cox's Pearmain, Devonshire Quarenden, Devonshire Red Streak, Domine, Domine de Neige, Dr. Harvey, Duchess Favourite, Duchess of Oldenberg, Dutch Fulis, Dutch Mignonne, Dummelow's Seedling, Duke of Devonshire, Dunn's Seedling, Early Harvest, Early Rivers, Early Strawberry, Early Victoria, Early Julien, Early Rivers Peach, Ecklinville Pippin, Emperor Alexander, Esopus, Elterby Beauty, Equitety, Farn's Pippin, Fane's Prince Albert, Five Crown Prince, French Crab, Frogmore, Galloway Seedling, Gascoyne's Scarlet, Gaspatrik, Gladstone, Gloria Mundi, Golden Reinette, Golden Medal, Golden Noble, Golden Sphere, Gooseberry Apple, Gravenstein, Grenadier, Grand Sultan, Hambling's Seedling, Hoover, Irish Peach, James Greives, Jonathan, Jupp's Surprise, Keswick Codlin, Kentucky Red Streak, Kerry Pippin, King of Pippins, King of Tomkins County, Kowboka, Lady Carrington, Lady Hopetown, Lady's Finger, Lady Henneker, Lady Apple, Lady Sudley, Lord Wolsley, Lord Suffield, Lord Nelson, Lord Hindley, Lord Grosvenor, Lord Derby, Lord Burghley, London Pippin, Manx Codlin, Margie, Mannington Pearmain, Mere de Menage, Melon Apple, Merdwertzkiana, Monmouth Pippin, Monroe's Favourite, Newton's Wonder, Newton's Pippin, New Hawthornden, Nelson Codlin, Nobbs Royal, Non Pareil (Russet), Northern Spy, Northern Greenling, Nother Apple, Ohenimuri, Old Golden Pippin, Old



Nonpareil, Old Hawthenden, Peasgood Nonsuch, Pearson's Plate, Peek's Pleasant, Perkins Pippin, Perfection, Pitmason Pine, Pine Golden Pippin, Prince Bismarck, Prince Edward, Pippin Reinette, Putt Seedling, Queen, Reinette de Canada, Reinette Gris, Reinette de Granville, Reinette Gris Deppidal, Reinette Vithaumenne, Reinette Ananae, Red Astrachan, Red Juneating, Red Transparent, Rhode Island Greening, Rome Beauty, Ribston Pippin, Rymer, Royale d' Angleterre, Royal Jubilee, Roundaway's Magnum Bonum, Scarlet Nonpareil, Scarlet Pearmain, Scarlet Golden, Sandringham, Senator, September Beauty, Shepherd's Perfection, Sharp's Early, Skye House Russet, Springdale, Spitzenberg, Stone Pippin, Sturmer Pippin, Statesman, Stirling Castle, Striped Beefing, St. Martins, Stephenson, Stainwrights, Summers Golden Pippin, Toddington Seedling, Thomas Rivers, Tom Putt, Tower of Glamis, Tylers Kernal, Versveld, Versfield's Warner's King, Warner's King, Wagner, Washington, Wadhurst's Pippin, Wheathey, Winter Quarenden, Winter Greening, William Anderson, Winter Majetin, Williams' Favourite, White Winter Pearmain, White Juneating, White Transparent, Worcester Pearmain, Wykins Pippin, Yellow Ingusture, Yellow Transparent, Yorkshire Beauty, Yorkshire Greening—204 varieties in all.

### ***Gasoline Engines on Harvesters.***

In America gasoline engines are now being mounted on harvesters. Engines of  $2\frac{1}{2}$  h.p. have been mounted on eight-foot harvesters, with successful results, and  $1\frac{1}{2}$  h.p. engines are also being used for six-foot harvesters, as engines of that size were not powerful enough to work larger machines. This is a new field for gasoline engines. According to the *Implement Trade Journal*, quoted by the *Gas Review*, many farmers express themselves as believing that gasoline engines will be purchased in coming years for operating binders in this way, even where the conditions are ideal, as they argue that it is cheaper to operate the machinery with a few gallons of gasoline than to use the additional horses which would be necessary. The platform used places the engine in a position on the harvester where it is perfectly balanced and it is unnecessary to move the bull wheel forward or back. The attaching of the chains, sprocket, etc., is such a simple matter that any country blacksmith, or even the farmer himself, if he has a few ordinary tools, can do the work without difficulty.

### ***Held Over.***

Owing to pressure upon our space we are obliged to hold over until our next issue the second instalment of the results of Agricultural Investigations at the Agricultural Experiment Station, Vermont, and also a portion of the report of the proceedings of the Fourth Annual Congress of the Inter-Colonial Agricultural Union recently held at Bloemfontein.



**Commercial Intelligence Bureau.**

## A NEW INSTITUTION.

## FACILITIES FOR PRODUCERS AND EXPORTERS.

IN view of the considerable number of enquiries which are made by various commercial firms and private individuals in the United Kingdom, on the Continent of Europe, and elsewhere, with regard to the export of Natal produce and in connection with other matters of interest to Natal farmers and producers generally, the Department of Agriculture has instituted a Commercial Intelligence Bureau for the purpose of putting producers and buyers in touch with each other and generally of furthering the commercial relations of the Colony with other parts of the world. Besides British and Continental commercial houses wishing to get in touch with Natal producers and merchants, there are doubtless many farmers, merchants and others in Natal who would be glad of the opportunity of getting into touch with buyers oversea, and it is to help these also that the Commercial Intelligence Bureau has been instituted.

The Bureau has been placed under the charge of the Editor of the *Natal Agricultural Journal*, who will keep records of (a) British and Continental firms desirous of getting into touch with firms and producers in Natal, (b) firms and producers in Natal who wish to be put into touch with buyers, brokers and manufacturers in the United Kingdom and elsewhere, and (c) growers producing in sufficient quantity for export. He will work in conjunction with the Commercial Agent for Natal in London, who will furnish him with the names of firms in the United Kingdom and Europe and give publicity in England to lists furnished him by the Editor of the *Agricultural Journal*, the Editor, in turn, publishing lists based upon the information sent to him by the Commercial Agent.

The attention of all who have an interest in oversea trade relations is accordingly directed to the Commercial Intelligence Bureau, and those who wish to get into touch with British and Continental firms should send full particulars of their requirements—what they wish to export, what commodity or commodities they wish to trade in, and so on—to the Editor of the *Journal*, who will transmit their names to the Commercial Agent (who will publish notices in various English papers), as well as give publicity in the *Agricultural Journal* (which has a considerable circulation abroad) to their requirements. No actual names will, of course, be published, numbers only being used as a means of reference. Growers producing sufficient quantities of various commodities for export are also requested to communicate with the Editor, who may be instru-

mental in placing them in communication with buyers in England and elsewhere.

The following is a list of firms, particulars of which have been received from the Commercial Agent. In each case the Editor will be prepared to supply the name and address of the firm, upon request, together with all details which he has received. It must be distinctly understood, however, that the Department of Agriculture accepts no responsibility in regard to the standing of these firms:—

1. A firm in Hamburg wish to get into touch with houses in Natal exporting mealies and wattle bark. Full particulars of the terms and arrangements upon which they are prepared to do business can be furnished.
2. A London firm of corn brokers desire to get into communication with Natal exporters of maize.
3. A firm of Indian and African merchants, in London, wish to get into communication with firms in Natal who are requiring agents in England to handle and sell their products, *viz.*, hides, skins, tallow, hair, hoofs, bones of all kinds, oilseeds, tea, etc.
4. A London firm wish to get into touch with producers in Natal, chiefly of fruit.
5. A firm handling the new patent Duchemin fibre machines (see *March Journal*, page 259) in London desire to appoint an agent in Natal, and also to get into touch with fibre planters.
6. A firm in Sangerhausen (Germany), who are manufacturers of beet and cane sugar machinery, desire to enlarge their business relations with Natal and are wishful of appointing agents in the Colony.
7. A firm of importers of grain in Paris are anxious to do business in Natal maize, and seek offers of such maize, *c.i.f.* French ports.
8. A firm at Swansea, importers of gold and silver concentrates, copper, lead, zinc and antimony ores, also calamine, wish to get into touch with exporters of such concentrates and ores from Natal.
9. A firm at Brigg, Lancashire, who are manufacturers of table delicacies, desire to be put into communication with suitable houses of good standing in the Colony.
10. A well-known importing and exporting firm in London wish to get into communication with firms desiring representation in London, or to get in touch with growers of maize and other produce.

---

On the 23rd November the extension of the Natal-Cape Railway from Creighton to Riverside was provisionally opened for wool and other goods traffic. Until the opening of the line for all classes of traffic, however, as stated in our last issue, goods can only be conveyed at owner's risk. The line will probably be opened for passengers, parcels, and live stock towards the end of January. The rate for wool from Riverside to Durban and Maritzburg is 24d. and 14·5d. per 100 lbs. respectively. In the case of other goods the Creighton rates plus 4d. per 100 lbs. apply. An additional charge of 1d. per 100 lbs. is made for loading and unloading wool and other goods traffic.

## ***The Rainfall in Natal.***

By E. NEVILL, F.I.C., F.R.A.S., Government Astronomer.

THE weather of Natal shows a distinct eighteen-year periodical fluctuation in rainfall similar to that which has been traced in so many other parts of the world. Thus the epochs of heaviest rainfall in Natal centre round the years 1855-56, 1873-74, and 1892-93, which are separated by intervals of about eighteen to nineteen years, and during the last two years there have occurred many indications that there will be a similar exceptionally heavy rainfall centring round the year 1910-11, at a similar interval of about eighteen years. This excess of rain is usually spread over a period of some five years, with generally an intervening dry year near the beginning of the epoch of heavier rains: sometimes in the third year, but more usually in the second year of the group.

The actual cause of this periodical variations in the rainfall of Natal has not yet been definitely ascertained. It is easy to find a plausible explanation, but the difficulty is to establish that this, and this alone, is the true explanation. To effect this proof it is necessary to have the means of testing the different possible hypothetical causes by seeing how far the minor features of each hypothesis are in accord with the actual minor fluctuations shown by the observed rainfall, and not merely rest content with showing that one of these possible causes suffices to explain an eighteen-year inequality in the rainfall. But the details of the minor features of this fluctuation in the rainfall can only be derived from the comparison of the observations of a considerable number of years, sufficient in number to extend over several complete periodical variations in the rainfall.

At present the necessary data do not exist, as proper records are not available for the earlier years, but they are being gradually accumulated by the observations that are being systematically made at the Observatory at Durban and its subsidiary stations.

As far as the observed variations are available, they seem to indicate that the origin of the excessive rainfall in Natal at these periods is due to the gradual northerly drift of the great rain belt, whose normal position is to the south-east of the Cape Colony. From some cause, at these periods this great southerly rain belt seems to move sufficiently towards the north as to impinge on the coast of South-East Africa, and produce heavy and continuous rain storms where it is deflected by the ranges of lofty mountains lying close to the coast.

This alternate drift to the north and south is a normal feature of the great cloud belt extending over the southern portion of the Indian

Ocean, and reaching its greatest intensity in about 40 degs. S. latitude. Usually its sway on either side of its mean position does not exceed a few degrees, but at intervals of some eighteen years the drift is sufficient to enable it to reach the coast of Natal, and then the rainfall rises from twenty to fifty per cent. above its average amount.

It is noteworthy that the epoch of these heavy rainfalls coincides with that of the approach of the node of the moon's orbit to the position of the vernal or spring equinox, when the inclination of the plane of the moon's orbit to the plane of the terrestrial equator reaches its maximum value, as if there were some connection between the two occurrences, and this coincidence points to a possible cause of this eighteen-year fluctuation in the rainfall.

The attraction of the moon on the terrestrial atmosphere must have the effect of deforming it into an ellipsoidal form with the longest axis in the plane of the moon's orbit, pointing a little behind the actual place of the moon in its orbit. And as the earth is itself spheroidal in form with its longest diameter in the plane of the equator, the effect of this deformation in the form of the earth's atmosphere under the attraction of the moon must be considerably enhanced when the plane of the maximum diameter of the atmosphere no longer coincides with that of the earth. When the node of the moon's orbit is near the vernal equinox, the inclination of the plane of the moon's orbit to the plane of the equator reaches its maximum value, and the range of the moon's distance from the equator reaches as much as 28 degs. on either side, whereas when the moon's node is near the autumnal equinox the moon never departs more than 18 degs. from the equator. Hence if the great rain belt has any tendency to follow the deformation of the atmosphere under the attraction of the moon, as it should according to theory, then the greatest northerly drift will occur when the moon's node approaches the vernal equinox, and this is exactly what is indicated by the observations.

It is to be noted that this is purely a local cause affecting South-East Africa, and not necessarily holding of any other place. The great cloud belt sways backwards and forwards over its mean place every year, owing to the motion of the sun, first to the north and then to the south every year, but this motion is not sufficient to bring it into contact with South Africa under ordinary conditions. The effects of the attraction of the moon is to increase the sway of the cloud belt, and when this effect reaches its maximum every eighteen years it suffices to bring the clouds belt on to the coast of South-East Africa. This by itself might not be sufficient to produce any marked increase in the rainfall of the year, were it not for the effect of the lofty ranges of mountains bordering this portion of the coast of Africa, which, by deforming the rain belt, break it up, and produce heavy rain-storms whenever this occurs.

Were there no such cloud belt with its great accumulation of mois-



ture, this motion of the atmosphere might produce no effect on the local rainfall, and the actual effect in increasing the rainfall obviously must depend on the amount of aqueous vapour accumulated in the cloud belt at the time.

The actual existence of this great cloud belt must be ascribed to the action of the sun, and any changes in this effect of the sun must affect not only the dimensions of the cloud belt but also the amount of potential rain in the form of great accumulations of aqueous vapour. Hence, if it be true, as many meteorologists believe, that there is an eleven-year periodical variation in the action of the sun, giving rise to a similar eleven-year periodical variation in the density of the great terrestrial cloud belt, then this variation will give rise to corresponding variations in the extra amount of rain falling at the epoch when this cloud belt reaches the coast of Natal at intervals of eighteen years. When this period of heavy rainfall coincides with the period of greatest density of cloud belt as produced by the varying action of the sun, then the excess of rainfall will be very heavy; but when it coincides with the view of least density of the cloud belt, then the excess of rainfall will be comparatively insignificant.

It is noteworthy that three eleven or twelve year solar periods of variation in density of rain belt are not very different from two eighteen year lunar periods, so that every thirty-five or thirty-six years the two should coincide and give rise to a specially heavy excess of rain, similar to that which is recorded by the observations. Thus the excess of rainfall near 1855-56 and 1892-93 was much heavier than that at the intermediate eighteen year epoch in 1873-74. If this be so the coming heavy rains of 1910-11 will not be so heavy as those of either 1855-56, or 1892-93.

It is distinctly to be remembered that much of this is mere hypothesis at present, and so it must remain until the observations in South-East Africa have sufficiently accumulated to enable adequate tests to be applied and definite theories to be formed and properly tested.

---

BOOK ON TROUT.—Readers of the *Journal* interested in trout may be glad to know that an interesting and discursive little book has lately been published by Messrs. Adam and Charles Black, London, from the pen of Mr. Wilson H. Armistead, on "Trout Waters: Management and Angling." The book is written with a knowledge based upon a considerable amount of personal observation and experience, and the views and experiences of the author are narrated in a pleasant and attractive manner. The price of the book is 3s. 6d.

## **Hæmorrhagic Septicæmia or Pasteurellosis of Cattle.**

By F. HUTCHINSON, D.V. Surgeon, Dundee.

### *Post-Mortem Notes on the Carcase of a Cow.*

*Thorax.*—About two pints of watery, dark, bloody-looking fluid present in left pleural sac. Left lung congested and interstitial tissue engorged with dark coloured blood-serum. Pericardium (heart sac) undergone considerable inflammatory process, thickened, with small flakes of fibrin adherent. About half a pint of dark coloured fluid exudate present in the sac. Blood spots present on the surface of the heart itself, also on the walls of its internal cavities.

*Abdomen.*—First, second, and third stomachs normal. Fourth, or true digestive stomach, patches of capillary congestion present on its inner lining. Intestines, spleen, and kidneys normal. Liver normal in size, but slightly softened.

*Head and Neck.*—Free portion of tongue swollen and bluish-black in colour. Pharynx, larynx, and trachea show hæmorrhages (blood spots), the latter throughout its entire length. Croupous deposits adherent to pharynx, larynx, and adjacent portion of trachea.

*Blood.*—Almost normal in colour, firmly coagulated. Coagulæ removable from vessels in form of long ropes.

The owner of the above case informed me that the disease showed itself quite suddenly, and that death took place in two days after the first signs of ill-health were noticed. The symptoms crudely described by him were: Animal appeared stiff all over, showed great disinclination to move, trembling or shaking of the body generally, breathing distressed, end of tongue swollen and bluish-black in colour. Temperature not taken.

I was further informed that the above was the second case that had occurred in his herd during the past fortnight, that he had lost nine cases on the same farm in the spring of 1907, that all the animals which took the disease were cows and heifers in milk, that the symptoms shown were similar to the case described above, and that death generally took place within three days after the first symptoms became noticeable. One cow appeared to recover, but moved very stiffly for several weeks afterwards. She, however, eventually took the disease again about six months after the first attack, and died.

I recently located the disease on another farm and had the opportunity of conducting a *post-mortem*. The subject was a young cow which also had been feeding a young calf. The lesions found were very similar

to those described in the above case, but those affecting the coverings of the heart were somewhat more pronounced. The tongue was not enlarged, but there was an external swelling about eight inches in diameter under the skin, situated over the upper region of the right thorax. This animal died on the third day of illness and the symptoms described by the owner were practically identical with those given by the owner of the first case referred to in this paper.

Microscopic examination of the blood in both cases, and the serous fluid taken from the external swelling in the one, showed large numbers of ovoid bacilli, free in the serum. The organisms in both cases appeared of a similar type, and, when stained, took the dye deeply at both ends (bipolar) with almost transparent centres.

("The organism, the cause of the disease, is a short bacillus, ovoidal, with rounded extremities. The organism when stained presents two terminal portions coloured with the intervening or middle portion uncoloured."—*Frieberger & Froehner*.)

I am inclined to the belief that *Pasteurellosis bovis* is much more prevalent in Natal than has hitherto been recognised. Many cases of the disease are more than probably attributed by stock owners to such affections as gallsickness, anthrax, poisoning, and even quarter-evil, where external swellings in the region of the limbs or quarters are observed.

#### ETIOLOGY.

The cause of the disease is said to be due to the action of the specific micro-organisms described above, and the disease is neither infectious nor contagious, that is, it is not directly "catching" from one animal to another as in the case of such diseases as rinderpest, lung sickness, etc. It is, however, easily inoculable direct from one animal to another by means of small quantities of blood, or serous fluid obtained from local swellings under the skin, and can be conveyed in a similar manner to horses, sheep, goats, and many other species of animals.

As in the case of anthrax or quarter-evil, the disease is spread by means of soil contamination (which explains the recurrence of outbreaks, once a farm has become infected), and the specific organism most likely gains access to the body by means of ingestion, wounds in the skin, or small abrasions in the mucous membrane of the mouth or alimentary canal.

#### SYMPTOMS.

These are of a very variable character, and may, for convenience in diagnosis, be divided into two classes:—

1. Those cases which show external swellings. (Exanthematic form.)
2. Those cases in which the disease is confined to the internal organs alone.



The latter is by far the more common of the two types, and the seat of the disease may be either abdominal, thoracic, or both.

In regard to the first, an œdematous swelling, or swellings, of the subcutaneous tissue may show itself almost in any part of the body, such as in the tongue, under the lower jaw, neck, limbs, fore or hind quarters, or even over the region of the thorax, or abdomen. The disease is usually ushered in quite suddenly, and as a rule when the affected animal is first noticed the symptoms are well advanced. The animal may show signs of stiffness, or even lameness, according to the locality of the lesions. The swelling or swellings are hard and tense to the touch, and of varying size. Rigours are present, and the internal temperature is usually between 105-107°. The temperature may, however, drop to normal, or even sub-normal, during the first day of illness, and death usually supervenes within three days from the onset of the symptoms.

The second, or internal, form of the disease is by far the more common of the two types met with, and the symptoms also manifest themselves quite suddenly. The disease is usually ushered in by rigours, extremely high bodily temperature, and, as previously remarked, the chief seat of the disease may be either thoracic or abdominal—if the former, the most marked symptom will be great disturbance of the respiratory movements, where the lesions are confined to one or sometimes both lungs. Pericarditis is also present, indicated by small, frequent, irregular pulse, and tumultuous beating of the heart. Should the chief lesions be abdominal, the organs usually attacked are, the fourth, or true digestive stomach, and the intestines; therefore colic pains and diarrhœa may be observed, and the fæces in that case frequently show casts of streaky mucous. In all the internal forms the animal usually appears to be suffering from a general condition of stiffness and moves with difficulty. As the disease progresses, the animal will, as a rule, maintain a recumbent position, becoming gradually comatose, death most likely resulting from toxic poison generated by the specific organisms; for in many cases it will be noticed after death that the few internal lesions present are of a very minor character, and on careful observation would appear scarcely sufficient in themselves to have brought about the death of the animal so quickly.

#### POST-MORTEM APPEARANCES.

Where external swellings are present, they will be found hard and tense to the touch. In acute cases, the connective tissue under the skin will be found infiltrated with thin, bloody-looking fluid, and on section of the swellings similar fluid will also escape from the cut surfaces of the incision, or out of the connective tissue when the skin is removed. In those cases that are of a sub-acute or semi-chronic kind, the fluid in and around the swellings has a lighter or sometimes even a straw-coloured



appearance. Internal lesions are usually found in all cases where the disease shows external œdematous swelling, but vary in character very considerably, and in some instances are of such an apparently insignificant nature as to lead one to wonder at the animal's early demise.

When the disease attacks any of the thoracic organs, one or both lungs may be enlarged, bluish-black in colour, and when incised the interstitial tissue will be found swollen and more or less infiltrated with dark coloured watery blood serum. There are also two or three pints of watery, bloody-looking effusion free in the thoracic cavity, and the pleuræ may be affected with sero-fibrinous inflammation, thickened, and dull in colour. Pericarditis is present in the form of sero-fibrinous inflammation and a bloody-coloured, watery exudation has collected in the heart sac. The surface of the heart shows hæmorrhagic spots, and also the inner lining as well. The blood is almost normal in colour, is always firmly clotted, and can be drawn from the vessels in the form of long ropey strings. The lining of the larynx and trachea is studded with small hæmorrhages, which may be seen throughout the entire length of the latter, and a croupous deposit is observed in the pharynx and larynx, extending down the trachea.

Abdominal lesions often occur concurrently with the thoracic. In the former the pathological changes are allied to those of acute gastro-enteritis. The fourth, or true stomach, shows patches of capillary congestion together with a croupous exudate attached to its walls. The intestines are affected in a similar manner and these may contain dark coloured liquid which has exuded from their congested walls—the result of hæmorrhagic-enteritis.

#### PROGNOSIS.

The disease terminates fatally in the great majority of cases, and the animals attacked die, as a rule, on the second or third day—occasionally cases last eight or nine days, and, in a few minor instances, death may take place in a few hours. Odd cases recover, but convalescence is usually slow, and the disease leaves the animal in a very emaciated condition for a very considerable time afterwards. A chronically stiffened condition of the muscular system asserts itself, which may continue for weeks.

The condition described must not be confused with the disease prevalent at certain periods of the year in the upper districts of Natal, and commonly known as "Stiffsickness." (For reference, see article in *Natal Agricultural Journal* of June, 1905.)

Animals that have once suffered from an attack of Pasteurellosis frequently relapse, and the second attack invariably proves fatal.

The peculiar characteristic of the disease is that cows with calves at foot are its chief victims—this having been the experience in regard to most of the cases that have come under my notice, although cattle of all ages and sexes are susceptible to the disease. It is not easy to explain

why cows in milk are attacked in preference to other animals. This, however, may reasonably be ascribed to their power of resistance to the attack of the organism becoming reduced, owing to the drain upon the system caused by the secretion of milk, thereby lowering the standard of resistance possessed by the blood, and thus possibly rendering it a more suitable habitat for the growth of the specific parasite concerned in the cause of the disease.

#### DIFFERENTIAL DIAGNOSIS.

The diseases for which Pasteurellosis is most likely to be mistaken are anthrax, quarter-evil and gallsickness. In the case of anthrax the blood is tarry in appearance, does not coagulate, and the spleen is generally much enlarged, and its contents almost in a liquid condition, but, as already stated in regard to the disease under review, the spleen is normal, blood coagulated and of a fairly normal colour. These points alone are sufficient under ordinary conditions to differentiate between the two diseases. In the case of quarter-evil the swellings are more pronounced, crepitate when palpation is applied, are more distinctly localised to one centre, and on section the tissues in and around the swelling are almost black in colour, give off a sickly odour, and blackish looking blood exudes from the vessels in the cut surface of the incision. Again, quarter-evil, as a general rule, attacks young animals, and in my experience at least cows suckling calves appear the most common victims of Pasteurellosis.

There exists a common tendency to apply the name gallsickness to any disease in the absence of particular or diagnostic symptoms, and more especially so in those cases where, on *post-mortem* examination, the liver and gall bladder are found in a well marked state of abnormality. These organs, however, show little or no changes in the disease under discussion.

#### TREATMENT.

Numerous kinds of local or popular remedies were tried in the treatment of the affected cattle on one farm but without apparent result, and, as regards medicinal treatment, there does not appear to be any known remedy which may be depended upon to either bring about a cure, or curtail the action of the disease once the specific cause has gained access to the system. I, however, suggested to the owner that he should try carbolic acid in two drachm doses in oil twice a day, but scarcely anticipate its proving of marked value as a remedy, although from the pathological point of view, it should be one of the most likely drugs to have a beneficial effect. Hypo-sulphite of soda given in two ounce doses twice a day, in a little water, might also prove useful. Where external swellings are present, free incisions should be made into them, irrespective of situation, and potassium permanganate, or a strong solution of same, well rubbed into the cut surfaces of the incisions.

PREVENTATIVE MEASURES.

As already remarked, the causal organism of Pasteurellosis is capable of living in the soil, which explains the re-occurrence of outbreaks, once a farm or paddock has become infected. The old-time practice of removing animals to fresh pasturage to rid a herd of disease often did succeed in curtailing its ravages, but this is a method of procedure that cannot always be carried out in these days, owing to the limited amount of grazing at the disposal of the ordinary farmer. Where, however, it is possible to move cattle out of infected paddocks, this should be done, but the greatest care must be taken to watch the members of a herd carefully for several days afterwards, and immediately isolate any animal showing the slightest signs of ill-health, otherwise infection will be conveyed to the fresh paddock, and thus defeat the owner's object in trying to escape further infection.

If the outbreak is confined to the milking cows in a herd, the removal of these animals alone from the infected paddock would probably prove sufficient to prevent further outbreaks, but if other members of the herd are also being attacked it would, of course, be advisable to move the whole herd.

As in the case of anthrax and quarter-evil, the greatest care should be taken to immediately isolate suspected cases, and these should be tied up to restrict their movements, in order to prevent the spread of soil contamination as much as possible. The ground upon which infected animals have stood may be disinfected and turned over deeply. In a like manner the disposal of carcasses dead of the disease should be carefully carried out, either by deep burial, or fire, wherever possible.

Susceptible cattle (cows in milk) should in any case be kept out of infected paddocks for some considerable period, and it would be as well to thoroughly burn off the veld when the grass is dry, during the latter part of the winter.

---

PRUNING BANANAS.—The operation of pruning is very necessary and important in connection with banana growing. Suckers that are not intended to bear fruit should be removed when not more than 1 foot to 2 feet high, and only two, or at most three, stalks left to each plant. These should be at different stages of development, one being fully matured, while the other is only half-grown. Banana growers are well aware that if left without pruning, there would be too great a number of suckers, and the bunches of fruit would be small and poor.—*Agricultural News.*



## **The Fibre Industry.**

---

By LEONARD ACUTT, J.P., Tongaat.

---

THIS industry is not attracting the attention in Natal which it deserves, and I do not think the area of land devoted to aloe-planting is on the increase. It is true that extension to some extent is being carried on on the South Coast, but, on the other hand, some large plantations both on the South Coast and in Zululand have been abandoned.

Since my first visit to Mauritius, I have naturally taken an interest in fibre, and it is with much disappointment that I have seen so little doing. I pen these notes in the hope that they will result in more being done to increase our acreage of aloe in the near future.

I am not wishing to alter anything which I said last year in my "Report on the Fibre Industry of Mauritius,"\* but I merely wish to emphasize a few points, which, though I mentioned them in that report, appear to me to be worthy of special attention.

In that report (page 1,208) I said: "The main danger we have here threatening any aloe plantations is that of fire. The cultivation of Creole aloe need only be of the roughest possible description, but a rough cultivation in this country means a quantity of grass and debris which becomes dangerously inflammable in the winter. In Mauritius this does not occur, the grass and debris is not, beyond the small patches, inflammable at any time of the year. Therefore (in Natal) either cultivation would have to be done to keep down the grass, or we should have to be careful to prevent outside fires coming in, and keep all roads and paths in the plantations themselves free of inflammable material."

Now, the first of the above two alternatives is, at the best, costly, and the other is dangerous and means a great risk, which is not good enough business to attract capital, and it is more than probable that losses by fire have contributed largely to the failures of some fibre companies or syndicates in our Colony, and the greatest care will have to be exercised in the selection of land and locality for fibre culture, and the most favourable circumstances secured for cultivation and protection from fire.

I would not be taken in any way as wishing to discourage the making of plantations. Let us by all means proceed along the lines of regular and systematic planting and cultivation of aloes for fibre-making, and let us be most careful in selection of land. There is a great future before the enterprise, but in watching the progress and prospects of the industry in Natal I am inclined to attach more importance than I did last year to a point which I touched on in my report in the following words:—

---

\* October Journal, 1907, page 1199.



"I do not doubt that there are many districts in the upper part of the country in which aloes would do well. Many parts of the 'Thorns' certainly would suit, and there are thousands of acres which are fit for no other crop, by reason of stones and poor rainfall."

Now, these thorn lands more nearly approach the conditions under which we find aloes growing in Mauritius in that the ground is rich and the climate dry. Moreover, in some districts in Natal I have in my mind's eye, the stones are so thick that there is never sufficient growth of grass to make such a fire as would injure the aloe plants, but the hills are covered with a growth of native aloes, brambles, etc., against which the *Furcraea* would hold its own, and if a few thousand "bulbils" of this aloe were planted by everybody owning a thorn farm, or even if the bulbils were dropped about, the country would in a few years be as much covered with fibre aloe as the Island of Mauritius is to-day, and a revenue would be obtained at any time when other work was slack. The cost of cutting the leaves and bringing them out of stoney places would be great, but against that would have to be set the fact that they had cost nothing to grow and the collection of the leaves would probably be a class of work which would suit the kraal Kafirs, men, boys, women and girls. Planting, or broadcasting, the "bulbils" would be necessary at first, but once the plants were old enough to throw up the "poles" with their crop of bulbils the aloe would spread with great rapidity, as the bulbils would be carried by the winds, and would hold their own against any native plants.

I have mentioned the idea to several "thorn" farmers, and I hear that Messrs. Evans, Worthington & Walters at their farm "N'Kashin" are taking the matter up and getting up bulbils from the coast, and I feel sure that they will have cause to be thankful that they started the work. What a field there is in the growth of wild aloes in this manner! and without taking up land on which something else can be grown.

When one contemplates the potentialities of fibre culture in this way one wonders that the idea does not seize upon the mind of the people, but to dip in Jordan is, of course, too absurdly simple.

Hundreds of thousands of acres of practically desert country in the valleys of the Tugela, Umvoti, Bushman's, and Blue Krantz Rivers might be utilised, and Zululand could spare as many acres more and not miss them.

I find in my report the following paragraph:—

"I think this would be a crop which the native might be encouraged to grow. Young plants might be scattered broadcast in kloofs and sheltered spots in locations; and the aloe might take charge of such places as it has done to such an extent in Mauritius, and prove a source of income in a few years' time, and make productive a large area of land on which nothing else can be produced."

I cannot imagine anything better that could be done for our natives

than covering large tracts of location lands with aloe; in course of time a large tonnage of leaves would be available, and men would not be wanting to put up machinery and pay a fixed price per 100 lbs. for the leaves, and thus give employment to the swarming population.

The "bulbils" are generally procurable for a few shillings per thousand and on rail at coast stations.

I trust that these few notes will induce everybody with suitable land to plant if only a sackful of plants, which can be done at any time of the year when plants are procurable. Another way in which to cover one's land quickly would be to get some well grown aloe plants from the coast; these would flower in a year or two and give enough plants to cover a large area of ground.

If Mauritius, a small island, only 34 miles by 22 miles, containing only 456,320 acres, can on its waste land produce £100,000 worth of fibre, as it has done, although the value of the output for the last four years was only £45,000 a year, what could Natal produce on its 16,000,000 acres, exclusive of Zululand?

A great industry is ready to our hand and one not requiring a large outlay. Let us put out our hands and take what is so obviously within our reach.

---

THE MEANING OF C.I.F.—"Shipper" writes in the *Shipping Gazette* as follows:—Having for a number of years done business in connection with shipping matters, there has just cropped up in my experience a difficulty in relation to the term c.i.f. This has always presented itself to me to mean that if I have sold goods c.i.f. the responsibility of the risk of damage to these goods lay with the sellers until actually landed from the steamship at destination. I have come across several friends recently who have told me that the responsibility of risk does not rest with me, but with the buyer. I would be obliged if you would kindly give me your opinion on this matter. Also please state if any difference would result supposing I deducted the freight from the invoice and allowed the consignee to pay." The following explanation is given by the *Gazette*: "Where goods are bought and sold c.i.f., on the seller properly insuring and shipping the goods they are considered to have been delivered to the purchaser, and to be at his risk. If the goods are lost or damaged, the claim of the purchaser is against the shipowner or the underwriter (see Lord Blackburn's explanation of c.i.f. contracts in *Ireland v. Livingstone*, 5 H.L., on p. 410; and compare the Sale of Goods Act, 1893, Section 32). Whether the freight is prepaid by the seller, or the consignee is left to pay it, the amount having been deducted from the invoice does not appear to affect the liabilities."

---

## **Horsesickness.**

---

By H. WATKINS-PITCHFORD, F.R.C.V.S., F.R.S.E.

---

(*A Paper read before the Bloemfontein Conference of the Inter-Colonial Agricultural Union.*)

---

WHEN it was suggested last week that I should read a paper upon South African horsesickness, I was not sure whether amid the many pressing duties of official routine, time was available in which to write a paper of sufficient importance or interest to bring before so weighty and representative a gathering of South African agriculturists.

I accepted the honour of reading this paper before the Union not because I had any startling communication to make concerning the disease, but because I knew that horsesickness was a subject of interest and importance to all South African dwellers on high and low veld alike, and that the details of progress in the investigation, and hopes of its future usefulness would be of interest to everybody who owned a horse, and especially to the agriculturist who is so nearly concerned in the welfare of the animal.

At the last meeting of our Agricultural Union in Natal I was criticised by a member who had discovered in the Government Bacteriologist an incorrigible—and to me unexpected—degree of hopefulness, so in speaking of the hopeful progress of this enquiry I am speaking in a chastened and diffident manner, I know of no motto, however, which will carry a man so far in any and every walk of life as *spes bona*. Held by the anchor of Good Hope we can ride out most of the storms and difficulties of life, and the many disappointments and perplexities of the study of South African horsesickness would have long ago led to abandonment of the enquiry were it not for the good hope of an ultimate success.

### HISTORY OF THE DISEASE.

Before, however, dealing with the application of late effort to the prevention of the disease, I shall ask your attention for a few minutes to some of the main facts connected with its history in the past, seeing that it is essentially a South African disease, our exclusive privilege and an inheritance handed down to us from the time when the ships of the old Dutch East India Company, trading between Java and South Africa, put the horse ashore at Table Bay in 1650 for the first time.

For sixty years from that date no disease of sufficient importance to be recorded in the annals of Cape Colony seems to have threatened the development of the infant horse-breeding industry, but in 1719 an



alarming outbreak occurred which swept off the majority of the horses of the Cape Colony; and this is the earliest reliable evidence I can find as to the existence of the South African horse malady which has so long baffled attempts at prevention or cure.

Some years ago I read a paper upon this same subject before a Natal Agricultural Society, and as passing time has not tended to remove or alter any of the impressions and theories set forth there I have no hesitation in quoting from this same paper. The following is an extract from an interesting letter showing the incidence of horsesickness upon the Cape Colony in the latter part of the 18th and earliest decades of the 19th century. The writer, who writes his letter from Fort Beaufort, says:—"I have never seen horsesickness before, but often heard of it. In 1839 my father lost upwards of 100 at Groot Vander's Bosch, and in 1819 he also lost a great many. In the year 1801, called the year of the great horsesickness, I have been told that the whole district was cleared of horses, and that it was nearly as bad as 1780."

This letter affords us a brief glimpse into the past, and is all the more interesting as showing the difficulties experienced by the South African horse-breeder as far back as the time when George IV. was on the throne.

The horse is, of course, an equine closely allied to the zebra (with its three species *Equus Chapmanni*, *E. Burchelli* and *E. Zebra* or Quagga, Burchells and the common zebra), and South Africa has been, as we all know, from time immemorial, the home of this species of the *Equidae* family. It seems therefore not a little strange that so closely allied a genus as our domestic horse should have found existence in a natural condition apparently impossible in the sub-continent.

The laws governing the questions of immunity and susceptibility seems at times very strange to us, and an apparently slight racial difference is sufficient often to constitute the impassable barrier. We may ask why the white rat is insusceptible to anthrax, when the brown or black rat readily succumbs, or why the sheep of Algeria can resist the same disease so fatal to sheep elsewhere all over the world. Many similar seemingly inexplicable problems will confront us on the fringe of the extraordinarily complex subject of immunity.

However this may be, we find that the zebra can exist in localities where natural conditions are impossible for the horse.

When one considers the apparent absence of natural barriers to the migration of the horse from the Northern part of the Continent (where—if not indigenous—the species has at least existed from time immemorial), it does not seem irrational to suppose that the disease which we know as horsesickness has been responsible for this repression or extinction of the wild horses in Central Africa.

Since the time of the first known introduction of horses by Euro-



peans, now some two hundred and eighty years ago, the disease has levied a heavy annual toll upon South Africa, in some years mild in its incidence, and in others denuding a whole country side of its horses. Edington (quoting doubtless from official papers) cites an outbreak of this latter sweeping form of the disease, which in 1854 destroyed 64,858 horses in Cape Colony alone, and this outbreak must be well within the memory of my hearers.

#### DISTRIBUTION OF THE DISEASE.

Of the distribution of the disease throughout the whole of the African Continent, south of the Equator, there seems no doubt.

Some years ago I was able to obtain, through the assistance of the Colonial Office, a number of consular reports, showing the prevalence of the disease as far north-east as Zanzibar, and as far as S. Paul de Loanda, on the north-west.

The Consul-General from Old Calabar, which is even north of the Equator, reports the prevalence of the disease "throughout the territories of the Protectorate," and from Angola the official report states that the disease is "most deadly," and that "horses die shortly after being landed." Thus we see a vast tract of country exists in Central Africa from which the natural horse would seem to have been eliminated by some destructive agency, while, as we know, he can flourish to the north of this deadly zone, and in the South the association with man, which means stabling and protection, affords at least the possibilities of existence.

From this rapid consideration of the geographical distribution of the disease the transition of thought to climatic influences is natural.

#### CLIMATIC INFLUENCES.

While in regions around the Equator the disease, as we have seen, is active at all times, we shall notice as we come South—that is, as we approach more temperate latitudes—to that degree, the disease horsesickness tends to become periodic or intermittent throughout the cooler months of the year, and as we leave Mashonaland and Matabeleland the country south gradually becomes free from the risk of horsesickness throughout certain months of the year.

In Salisbury (Rhodesia) I saw a typical case of horsesickness in the depth of winter, and was informed that such cases were by no means uncommon. In Natal many have heard of such cases (especially on the milder coast belt of the Colony), but as a general rule Natal and the Cape Colony enjoy an almost entire immunity during some six months of the year. In fact, it may be laid down in general terms that the disease horsesickness is connected with the mean temperature of the district. Exceptions, of course, occur, but we may say with confidence that the incidence of the disease is greater upon those dis-

tricts possessing, by their geographical character, milder and more sub-tropical conditions of climate.

Further than this abundant evidence is forthcoming, as to the intimate connection of outbreaks of the disease during or following seasons of exceptional rainfall. Coastal districts, swamps and districts well watered and wooded are especially liable to its ravages, and the occasional outbreaks on the high veld of the interior have a direct relation to the rainfall and probably the level of the subsoil water.

Humidity and warmth then are accepted factors in the production of the disease, or if not concerned directly with its production, are at least invariably associated with that sweeping (epizootic) form of the disease which occasionally devastates our stables.

Some of you, gentlemen, will I expect have heard, even if you have not personally met, cases of the disease occurring in the depth of winter, or in places where conditions of warmth and moisture can hardly be said to obtain.

I think such instances are authentic, and they would be inexplicable if from our recently attained knowledge we did not understand the length of time the germ of the disease can remain latent within the system of the horse, just as we know how the germ of malaria will remain quiescent in the system of man for weeks and months and suddenly spring into active evidence, heralded by the well-known shivering and fever.

Cold, exposure, exhaustion and other depleting and enervating causes will often precipitate a smart attack of malarial fever in a person who perhaps many months previously had the misfortune to become infected by the disease.

#### THE DISEASE GERM.

That the germ of horsesickness can lie dormant in the system of the horse for a lengthy period, much longer in fact than the stated period of incubation, I have frequently proved in my experimental work with this disease; and this fact is the more interesting when one considers the usual rapid and certain symptoms produced by the disease when gaining access to the horse's system in the ordinary way.

This lengthy period of incubation has not, I believe, been noticed elsewhere, and it may have some bearing upon the question as to those infrequent occurrences of the disease at other times than in the horsesickness season.

It is not, however, to this or any other of the more speculative and theoretical questions attending the study of the disease that I would ask your attention.

I will endeavour, briefly, and as clearly as I can, to enumerate the possible modes of infection, by which, of course, we understand the manner in which the disease is contracted by horses. The usual



(1) Ascending.



(2) Descending.

---

HOW THE "CATERPILLAR" ENGINE TAKES SANDHILLS.





manner of contracting a disease is by contact—*i.e.*, contagion. A very short survey of the disease in question will suffice to show us that simple contact or association, however close, of a sick and healthy horse does not produce horsesickness. Examples of this method of infection would be found in rinderpest, or smallpox, etc.

To every instance in which two animals in a stable have taken the disease simultaneously probably five hundred instances could be brought forward showing that horses on either side of the sick animal remained for the time being perfectly healthy.

In fact, gentlemen, I am dogmatic in saying that horsesickness is not transferable from one horse to another.

Does the horse then pick up the germs of the disease with his food, or water, or does he breathe them into his system as he inspires?

Here we arrive on more debatable ground—ground which, as we all know, has been very well traversed by lay and professional observers alike for some three or four generations past in South Africa.

#### CAUSE OF THE DISEASE.

It is very interesting to refer to a number of conjectures on the cause of the disease which were furnished to the Governor of the Cape Colony in 1855 by various district surgeons, surgeons of regiments quartered in South Africa, and civil commissioners. A great variance of opinion is evident. For instance, Doctor Soek, writing from Clanwilliam in October, 1855, states his opinion that the disease is caused by “a deleterious miasma in the air, which being inhaled by the horses does not cause inflammation and suffocation, but taken up in the blood and the ramification of the bronchia acts as a poison by destroying the vitality of the blood.” The practical advice given by this writer to prevent the disease is as follows: “The wild garlic is to be recommended to travellers who travel early in the morning or late in the evening, and especially those passing over low, marshy ground, to have a small quantity of the garlic pounded and tied in a small piece of rag and this rag affixed to the bit of the horse.”

This suggestion for the prevention of the disease is of more value than the recommendation of Doctor Cooper, of Somerset East, in a letter dated October 5th, 1855, in which the worthy medico advises in all seriousness as follows:—“Let the patient be hung up by his hind legs from the beam of the stable three or four times a day for a few minutes so that the discharge from his lungs may run out mechanically.”

The general consensus of opinion, professional and lay, about that period seems to have been that miasma, morbid poisons, sudden changes, poisonous herbs, honey dew, bad air, oppressive atmosphere, etc., were responsible for the disease, whilst the Staff Assistant Surgeon, writing from Fort Peddie in 1855, states that “cold is the exciting cause of

the disease," an opinion which any of my hearers who have lived on the warm coast belt will be hardly likely to endorse.

"Bitter" and "sticky" dew and an unaccountable prevalence of fine cobweb gossamer on the veld were considered by people of 1855 to be the cause of the great outbreak in that year. T. B. Bayley, writing in 1856, says: "These webs were unusually abundant everywhere in the early part of 1855, and could not fail to attract notice." Such appearances were a marvel to those of days long prior to 1855, for as far back as 1390 Chaucer sang:—

"As some sore wonder at the cause of thunder  
On ebb and flood, on gossamer and mist.  
And on all things, till the cause is wist."

But perhaps the strangest of all hypotheses which have been produced to account for horsesickness is that which was contained in a letter written by a medical man from Genadendal, in which the disease is attributed "to the atmosphere remaining behind the earth in its rotation." No wonder amidst such bewildering conjectures and theories the pious old Boer shielded himself behind his fatalistic philosophy, and in the frequently devastating epidemics of horsesickness saw only the chastening hand of Providence.

As we have seen, the disease by general consensus of opinion is not contagious—*i.e.*, it cannot be caught by the close contact of a sick horse with healthy ones. Neither is it directly infectious, scattering the germs of the disease about in mangers, horse troughs, clothing, etc., as in the case of glanders. We are all agreed, I think, on these points, and confirmed in our scepticism concerning such agencies as spider web, cold draughts, sudden changes of weather, etc.

There remains, however, among other things the possibility of the horse becoming infected by ingestion, or, as we call it, something he picks up, either with his food or water, or breathes into his lungs.

We all of us know the universal theory of the association of dew with the disease, some going so far as to attribute to the dew itself the actual production of the disease. I know that this theory is very widely spread; in fact, the so-called "dew-theory" is held to-day by many.

The facts supporting this dew theory are briefly as follows: Practical horsemen have noticed, first, that the more efficient the stabling the greater the protection afforded; secondly, that horses can be safely exposed about the time the grass becomes dry by reason of the evaporation of the dew, and that when the dew is on the grass—*i.e.*, during the evening, night, and early morning—is the time during which the disease is liable to be contracted. During the continuance of wet weather there is little dew and little risk, etc., etc., and such other arguments lend themselves not unnaturally towards the theory of the causation of horsesickness by dew. Such dew was supposed to be inhaled as the horse

grazed among the tufts of grass and herbage, or was swallowed with the food, and it has been frequently suggested in order to account for the presence of the microbe on the ground and herbage at certain hours only that the dew entangles the microbe which is floating in the air and thus causes its subsidence or precipitation on the herbage which becomes dangerous as it becomes dew-laden.

That such a process as this is impossible, a consideration of the principle of dew formation will show, for, as we know, dew does not fall, like rain, but is condensed as it were only upon the actual surface upon which it appears, in a similar manner, in fact, to the moisture which condenses from our warm breath on a cold window pane. The idea therefore of falling moisture bringing down the fatal germ and depositing it on the ground is not to be entertained. Besides, if it comes from the air in this manner, why are not all the horses in the district affected simultaneously?

I have collected quantities of dew during the season from localities as dangerous as I could secure, and I have not only drenched horses with dew, but have introduced the same directly into their veins—which is the most certain of all methods of producing the disease, even when the merest trace of the disease exists—but my results have been always, as I expected they would be, entirely negative. I think, gentlemen, you will in justice then preserve a very open mind towards the dew and remain unbiassed against this agent, which has been so often accused, for we can get no further evidence of its guilt.

Is then the evasive and malignant cause to be found in poisonous herbs or roots? I think the owners of large stables on our coast line and elsewhere will probably deny the possibility. Innumerable instances of horses kept strictly on dry food (corn and imported hay) and receiving no herbs, green or dried, will be brought forward to prove that infection has nothing to do with poisonous herbs.

Perhaps some may think the drinking water becomes contaminated. Evidence has often pointed to infection occurring when animals were taken to water, but not to any general infection being contracted in this way—that is, several horses have drunk at the same spot about the same time and perhaps only one has taken the disease; and I may say here that I have a number of instances in which horses have become infected where no water has been given except that which has been boiled and allowed to cool (with the cover kept carefully on the boiler during the process) to prevent possibility of contamination.

It has been thought by some that the germ may be carried about with currents of air and by wind, and that it may be inhaled and cause infection in this manner, and so account for those sweeping attacks which destroy numbers of horses during a bad season.

Here again, however, the objection is insuperable, for as with the



two men working in the field, "the one is taken and the other left." Such conditions of infection as suggested above are uniform and general in action, while the contagion of horsesickness is erratic and irregular to a degree.

We have, I think, excluded food, water, air, the dew, cold and heat, and other climatic conditions, as also other agencies, whether eaten, drunk, or inhaled.

There remains, gentlemen, the possibility of inoculation or the introduction of the cause of the disease into the system through the puncture of the skin, such as happens in the infection of the ox by the tick in redwater or East Coast Fever, or infection of man with malaria, and in numerous other instances of disease production.

I fear I may be deemed to have unduly laboured this point, but I wish to bring as far as possible before you all the arguments in favour of the disease being produced by or through any of the modes and agencies which I have laid before you.

#### INSECT BITES.

For years past I have, as you know, held the opinion that horse sickness is produced by the bite of a flying insect, and I was led to attempt a proof of this theory by consideration of the negative side of the various arguments which we have enumerated.

All of these seemed wanting in some one or other vital particular, and the theory was forced upon me as much by the process of elimination of other causes as by the strong parallel or analogy existing between horsesickness and human malaria.

Since that time a stronger parallel has arisen in the yellow fever of men (which has been such a dread in the West Indies and elsewhere), and this disease has since been shown to be due entirely to the infection through the inoculation of human beings by a species of mosquito. In this disease yellow fever, the microbe of the disease is too small to be seen even by the most powerful microscope, and this, as you probably know, is true also of the disease horsesickness.

If we now consider briefly the possibilities of the malady being produced by the attack of an insect such as a mosquito, I think we shall come to the unanimous opinion that such a means of spread of the disease is probable, and when I have briefly enumerated the proofs of this theory we shall, I think, be prepared to admit its conclusiveness.

I will very briefly give the outline of an investigation undertaken by me with the object of proving the agency of insects in the production of the disease.

#### A TEST.

A number of horses were taken from Natal into a district of Zululand by repute most deadly for the disease.



The intention was to maintain certain animals in such condition and amid such surroundings that while they were protected against the possibility of insect attack they could at the same time breathe whatever miasma the air might contain and inhale or swallow any infective dew or herbage which grew in the vicinity, and, in fact, be subject to conditions as similar as possible to the other horses surrounding them in all other ways except in respect to their protection from flies.

This protection was effected in two ways, first by constructing a light frame work box, the walls of which were formed of sheets of fine gauze netting (No. 32). Through the walls of this box the contained animal was clearly visible, and currents of air could circulate with the greatest freedom. It is not possible, therefore, that germs which are too small to be seen by the most powerful microscope, and which are able to squeeze themselves through the pores of the densest porcelain filters would experience much difficulty in passing through No. 32 netting and gaining access to the test animal under observation in the gauze box.

I am satisfied, therefore, that the possibility of atmospheric infection were adequately provided for.

Two horses were tethered to posts as close to this box as possible, and these animals, which I call the "control cases," or simply "controls," were subjected to exactly reverse conditions—*i.e.*, they had no protection from any insect; they received no green food or herbage of any kind, while the earth upon which they stood was burned over and trampled hard so that no blade of grass was in their reach.

If, therefore, atmospheric influences were concerned in the production of the disease all these animals should have been equally infected, if dew-laden grass or other deleterious green food was concerned, then the horse in the box should alone become infected, because he alone received green food, cut at nightfall and dawn, and further, in case it should be urged that the drinking of natural water caused the disease, the control animals outside receiving the dry food received also nothing but boiled water, while the horse in the box was watered directly from the spruit.

With the result of this experiment you are probably familiar—the horses outside the box fell victims to the disease and were replaced again and again by other fresh horses, which in their turn succumbed, leaving the horse in the box close at hand absolutely healthy.

The other method of protection was by stabling the horse it was sought to protect in a smoky atmosphere. For this purpose two rough wattle and daub stables were erected and horse dung fires were set smoking about sundown in the doorway. During the day some of these animals thus stabled were permitted to graze naturally, but were brought up as the sun got low. Four or five control horses picketed about went

down one after another with the disease, but no case of sickness occurred amongst the horses in this rough stable in which the air was kept smoky by a smouldering fire.

#### THE MOSQUITO.

Thus, gentlemen, by a gradual process of elimination we have shown that most of the factors and influences which we have been taught to regard with suspicion are harmless, and we must admit the possibility of a disease-producing something unconnected with food, water, wind and atmospheric influences, dew and even spider web. It must be capable of rapid transmission, must be associated with moisture and absence of sunlight, it must be absent during heavy rains but prevalent afterwards, cold weather checks it, a fine gauze debars it, and when it travels it certainly does not prefer a "smoking compartment." What will satisfy our equation but a flying insect, active about sundown and sunrise, fond of moisture, avoiding the light and the heavy rain, and being most vigorous and aggressive in the close and sultry weather of our summer climate?

The mosquito occurs to all of us. I have spent many an hour on summer nights walking round a lantern suspended in a mosquito net in suspicious localities observing the nocturnal insects attracted by the lamplight, and with one rare exception—too rare and inconstant to be given serious consideration—the insects so observed have been mosquitoes of various sorts and harmless moths, etc.

Such facts as I have brought forward above have long since carried conviction to my mind as to the cause of the disease, and if any gentleman here still retains a doubting mind as to the manner in which horsesickness is produced, I shall be glad to discuss with him the question in the hope of being able to remove his doubts.

So much, then, for this part of the enquiry. Now what is its practical application?

#### PROTECTION BY SMOKE-SMUDGES.

I think we may claim to have already experienced practical benefit in many parts of South Africa. A knowledge as to the nature and direction from which to expect attack is a great point in successful defence, and if we know that by keeping our horses from the attack of blood-sucking or biting flies we shall ensure their safety one great point is gained. When we know further the time of the day or night at which an attack is to be delivered we are still better able to arrange our defences.

The use of smoke—"smudges," as they are called in America, as a means of keeping away flies has long been resorted to, and such a means for the prevention of horsesickness I have always advocated since I became convinced as to the method by which horses became infected. The practice of keeping our stables in Natal enveloped in smoke during the

sickly season has already given the best results where the precaution has been properly carried out. With our Natal Mounted Militia Regiments the compulsory adoption of a system of smoking stables has resulted in a great reduction of the number of horses returned as dying from horsesickness with a corresponding saving in our Militia horse insurance fund, and I have no hesitation in saying that in large stables where proper management is exercised, and horses do not leave the stable during the night, this deadly disease can be defied.

Since first suggesting this means of protection some eight years ago, it has been curious to find such large numbers of horse owners who assert and are evidently under the impression that from their youth upwards they have always been in the habit of smoking their stables as a precautionary measure.

That smoking was sometimes used as a protective agent without a knowledge of the reason for its use I have no doubt, but I can safely assert not only was such smoking so infrequent as to have escaped observation, but that the official recommendations to protect stables by smoking have been the direct outcome of reasoning from the cause toward the effect.

A short time since my attention was drawn to a pamphlet on horsesickness published at Capetown nearly sixty years ago, and amongst other observations the writer—who was evidently a shrewd observer—says: “I have heard of one old Boer who kraaled his horses during the epidemic of 1839, and kept, or said that he kept, a strong fire of rhinoster bushes burning to windward all night, so that the smoke might be constantly drifting over the kraal. A good many of his horses survived the dangerous season; but whether owing to the smoke (seeing that it was scarcely possible to keep it up all night, and every night for months) is rather problematical.” And he goes on to advocate the erection of rough stables, giving details for the proper construction of same, although he is not very sanguine that this advice will be found worthy of acceptance, for he says “objections, I know, will be made, on the score of the want of time and deficiency of labour, especially at that season when the ‘tramping’ is to be done.” But we may hope for more enlightened days, when if immigration is still denied us, at all events this barbarous (and for brood mares perfectly murderous), operation will have been superseded by a more general use of the thrashing machine. And in a footnote he says:—

I have been informed that Mr. R. Hare (residing in Zwartland), one day last summer finished with his new thrashing machine 120 muids of wheat at the farm of Van Schoor, on the Koeberg, using only eight horses. The example thus shown has not been lost on his neighbours, as orders to a considerable extent have been already sent to England for implements of the same sort. The gain in time and labour, as compared with the “tramping” process, is enormous, to say nothing of the relief afforded to the unfortunate animals so often immolated by this destructive practice.



I quote this latter observation to show that the disinclination to take measures of precaution against diseases is not a failing only of the present generation and also to instance the primitive agricultural method in vogue within the memory of many South Africans of to-day, the treading out of the grain from the ear by the means of horses and oxen dating back almost to the earliest dawn of agricultural effect "When Adam delved and Eve span."

Great strides have been made in agriculture as with most other branches of human endeavour during the last sixty years, and primitive methods have given place to more scientific methods with wonderful rapidity. You will remember Tennyson says:—

"Science moves but slowly, slowly,  
Creeping on from point to point."

But science does not always creep, sometimes she bounds, and the progress of science within the sixty years since the above letter was written equals the scientific progress of centuries of previous effect.

So much for the manner in which, firstly, the disease horsesickness is carried and spread, and, secondly, the manner in which it can be prevented. Both these points may be looked upon as having successfully withstood the tests of theory and practice, although minor points as to the exact species of mosquito or blood-sucking fly and such like academic details remain to be elucidated. Such minor considerations, gentlemen, will not trouble you greatly, I think, nor can they greatly affect the main problem of its solution.

The prevention, however, of the disease by smoking our stables is not likely to be the ultimate method, or, indeed, the best means of protecting our horses.

The maintenance of a smoky atmosphere is troublesome, the trouble throughout a lengthy sickly season is considerable, and the risk of infection during the day time, during sultry and still weather, exists, especially in shady and moist places. The risk of infection during the day is only slight, but sometimes proves the "heel of Achilles," the vulnerable point in our defence, and it is necessary to devise some more perfect armour which can be depended upon at all points and in all places. This has been for some years the problem which has confronted workers with the disease, and, in spite of the admonitions of my Natal friend, I cannot help feeling sanguine that the problem is practically solved.

#### VACCINATION.

To ask you to follow me through all the experiments and endeavours which have led up to the present results would, I fear, weary without informing, although you will, I know, understand that failure—first in one direction and then in another—has made the "negative evidence" which is often as much use, though not so encouraging, as the step forward.





Going over a Marsh.



The Engine and Wagon taking a Ditch.

---

MORE VIEWS OF THE "CATERPILLAR" ENGINE.



It will be known to some of my hearers that I have for the last year or two been endeavouring to establish a system for treating the horse by means of a vaccine, which, while producing a mild form of the disease, will not endanger the safety of the animal.

Without the production of a mild attack of the disease—a “reaction” as we call it—I do not believe any form of prevention will ever be devised or any artificial immunity of the horse’s system established, though, as I shall shortly endeavour to show, reaction in a naturally resistant horse is not necessary.

It is in the direction, then, of producing a mild and controllable form of the disease that my efforts have been particularly directed.

Some years ago I essayed to do this by the use of a serum produced by hyper-immunisation such as we were successful in devising to combat the disease rinderpest, but the serum system of immunisation as applied to the horse seems to me impracticable for several reasons. It is possible, however, that Dr. Theiler, of Pretoria—who has already been so successful in solving research problems—may be able to evolve a practical method for the protection of the horse out of the so-called serum system, in the same way that he has established a system of protection for the mules. In my experience, however, the mule and the horse differ widely in their nature as far as horsesickness is concerned, and measures suitable for the treatment of the mule fail when applied—even with modification—to the immunisation of the horse. The difficulty which has confronted us for so long has been the very great difference which exists in the susceptibility of different horses. A treatment which is so mild as to give rise to no reaction in one horse will be sufficiently severe to cause a fatal attack in another animal, and, as you will see, the difficulty is still further increased when I tell you that the susceptibility of one and the same animal varies so greatly that the blood taken from a horse during a mild attack of horsesickness is sometimes capable, as I have proved, of causing death when re-inoculated into that same horse’s system some six weeks later, after recovery from the first attack was apparently complete.

#### NO ABSOLUTE IMMUNITY.

Such facts as these, with our frequent experience of a so-called “salted” horse dying of horsesickness when removed to a strange district, and other facts of similar import, have led me long since to think that no condition of absolute immunity exists in the horse, that “salting” is never or rarely absolute and complete, but varies in its degree not only between different horses and different localities, but actually fluctuates and varies within the system of the individual horse from time to time.

From this conviction I have been led to establish the principle of protecting the most susceptible horse.

The more resistant animal will probably not react to our preventive measures, neither do I think it is necessary to force him to react by increasing the severity of our preventive measures. It is the most susceptible horse which suffers, and it is, I think, only for the most susceptible horse that we need protective measures.

To produce so modified an attack of horsesickness in the horse that even the most susceptible animal recovers has been my endeavour for some years, and I now experience no difficulty in producing a mild and safe form of the disease in the majority—perhaps 80 per cent.—of horses inoculated. The remainder which refuse to react or only respond very slightly I am content to leave, considering Nature capable in such cases of fighting the battle without man's assistance.

It will be known to some of you gentlemen that I have for the past few months been watching with great interest the fate of some thirty horses and foals, and as many mules, which have been inoculated, have reacted, and have been exposed to natural infection in the worst locality for horsesickness I could find in Natal—*viz.*, on the warm coast belt near the mouth of the river Tugela. Here the conditions are sub-tropical all the year round, and horsesickness can never be said to be absent. A number of other horses (15) not inoculated were sent down to the same spot to serve as "controls" to contract the disease if possible. Of these latter 8, or 53 per cent. (since writing two other control horses have succumbed, making 66 per cent.), have died from naturally contracted horsesickness, while of the test or inoculated animals only one has succumbed to the disease, and to the death of this animal other causes contributed.

I have, therefore, no hesitation in saying that, whatever the ultimate fate of these horses may be, the process through which they have been passed—which is simple enough in its nature—has strengthened their power of resistance to such a degree that they have defied exposure to the disease in a locality which has proved fatal to more than half of the uninoculated control animals exposed with them.

As the horse hitherto has rejected all man's proffers of scientific assistance and has succumbed to horsesickness whenever and wherever he has been brought into contact with the horsesickness germ, the above results are, I believe you will agree, very encouraging.

The solution of this long-vexed problem, however, will not, I think, be on the lines as indicated above, encouraging as they are

#### THE FINAL SOLUTION.

For some time past I have been coming to the conclusion that it will be through the young animal—the foal—and not by treatment of the adult horse that we shall solve the question of South African horsesickness.



Very briefly, for your patience must long ago have been exhausted, I will state my reasons for so thinking:—

Firstly: The foal tolerates experimental inoculation much better than the grown horse. My last series of 20 foals (ranging in age from 6 to 15 months) have easily and safely reacted to a vaccine of such strength that it killed with typical horsesickness the three control horses inoculated with it at the same time.

Foals are not insusceptible, for I have seen them die from the disease, produced artificially, and also contracted naturally. Their immunity of tolerance, however, is much greater than that of the horse, and this fact alone renders the use of the foal advisable.

The second consideration is an economic rather than a scientific one. It will at once occur to us all that it is better to secure the protection of the horse while a yearling rather than wait until time, training, and cost of keep, etc., have increased both his value and the difficulty of the operation itself, as well as increased, at the same time, the risk of a natural and fatal form of the disease.

I have seen no sign in the foal which has reacted of those undesirable symptoms of shortness of breath, etc., which we sometimes find in the salted horse, and I believe that the immunity, or rather the "resistance," which we produce at this age is akin to the resistance which the horse born and reared in a sickly district acquires—a degree of insusceptibility in short which is not attended by any physical disability of heart or lung tissue such as we so often see in the so-called salted horse and mule.

For these and other reasons it seems to me better to attempt the treatment of the horse as a foal, and I can think of no reasons against the procedure.

You will ask me how I can feel assured that the foal will retain its immunity or resistance as it grows and becomes adult. This question I am at present unable to answer with certainty, and I shall note with great interest the behaviour of the young animals recently passed through the process as they approach adult life. All the probabilities favour the assumption that the degree of resistance gained as a yearling will continue to protect the adult animal. If not, there can be no doubt that the original inoculation made during youth will, if repeated in later life, be tolerated better than by the mature horse inoculated for the first time.

We have yet much to learn concerning this most perplexing disease. For some years past it has been my ambition to see horsesickness as preventable a disease as rinderpest, and to see South Africa the first and finest horse-breeding and remount country in the Empire.

If this ambition is not to be realised, I shall be satisfied if I can feel that, by my efforts, some more fortunate scientist has been helped to—

wards the goal of a success which will mean so much, gentlemen, to the prosperity of the horse-breeder, the welfare of South African agriculture, and, last but not least, the mitigation of a great mass of animal suffering annually sustained by man's patient friend and servant the horse.

---

## ***Irrigation in Natal.***

By JAMES PENISTON, Weenen.

---

WE have several irrigation settlements in Weenen County—Winterton, Weenen, and Tugela Irrigation Works, and the Mooi River Works, and there is a lot of irrigation going on at Muden. At the latter place there are several men who go in for irrigation in a sensible manner and also a few in Weenen and at Winterton, but the great majority just turn the stream of water on to the land at the highest part and divide it, or let it divide itself, and allow it to run, doing at the rate of perhaps an acre a day; and some even go as far as letting the water run night and day. In conversation, these men will say "they let the water sleep on the land."

It is hard to calculate the amount of damage done to the land by such practices. A few remarks on the proper mode of irrigation may be of some use to the new settlers; and at the same time if some of the old settlers would give the right way of irrigating a trial I feel confident they would soon forsake the old method, which only benefits one class of the community, *viz.*, the manufacturers and merchants who sell fertilisers. Besides this, it ruins the land, making the crops uneven and generally washing all the best of the land to the lowest corner of the field.

In the first place do not have too strong a stream in the plough furrow: just what it can carry nicely without overflowing is enough. The furrows should be from ten to fifteen yards apart. This depends greatly on the amount of fall there is. On some land the furrows can be as far as twenty yards apart. Now, take fifteen yards—always judging by the lay of the land—down the furrow and put a sugar bag half full of earth in the furrow, and stop any water that overflows with a spadeful of earth. The water will, of course, soon fill the furrow and should move steadily over the land to the next furrow. Now remove the bag of earth and place it a few yards lower down the furrow. By keeping steadily at this an energetic man can irrigate three acres a day and do it well, leaving the ground in the same condition as a good rain would.

But the furrow one is irrigating from must not be too long or it will wash deep. This can be avoided by having a furrow on the outside of the land and a cross furrow through the land. It is clear water that does the most harm to the land. When the river is full or very muddy is the best time to irrigate: one can see the reason why by taking a glass of the muddy water and letting it stand for a day or two; there will then be a silt at the bottom of the glass, which will give an idea of the amount of silt which would be left on an acre of ground. When irrigated with muddy water by the above method there is no washing away of the soil, as each time the obstruction in the furrow is removed the water just sinks away. Now in the old way consider the amount of seed trodden down by the men who are irrigating: every time one of the men puts his foot down he drives the seed a foot to eighteen inches at least into the mud, where it has not the slightest chance of ever working its way through the soil.

Many people will say irrigating turns mealies yellow and spoils them. That is the case when the land has had too much water, *i.e.*, been badly irrigated. Properly irrigated water can never do damage to mealies, and irrigated properly at the right time makes a great difference in the number of muids per acre. Again in irrigating land before ploughing many people will plough the land before it is dry enough. One can easily test this: take a spade and dig out a spadeful here and there; if it is fit for the plough, on turning over the spadeful the ground should, though moist, crumble and divide easily at the touch of the spade. Furthermore, where crops are planted in line, irrigating and the horse hoe must go hand in hand. After each time the land is irrigated, just as soon as it is dry enough, horse hoe the land and use the same test as for ploughing land, after irrigation, mentioned above. Land horse hoed at the proper time after irrigating will do without water for a much longer time than land irrigated and not horse hoed.

In properly laid out land one should be able to do many acres of land without getting his feet wet, but in uneven ground one must have a native with him to irrigate patches that are left owing to the unevenness of the land; but make him do it as quickly as possible and get him out of the wet ground as soon as you can. By the old method one will often see a white man with trousers turned up above his knees and two or three Kafirs walking about in the wet ground and making it more fit for making bricks than for growing crops. Irrigating thus the water will sink to a great depth, and much more water is used than should be, besides much harm being done to the land. Also, after such an amount of water has been put on perhaps a heavy rain sets in—in fact there seems to be no judgment used in many cases. The more water put on and the stronger the current in the furrows, of course, the sooner the land is irrigated, no matter how the land has been churned by the bare feet of the men, or how many pools of standing water there is left behind,



or how much land is washed away. Properly irrigated land should look as if there had been a nice rain, not as it does in many cases as if a river had run over it.

Col. Corbett, the irrigation expert, when he was here expressed surprise at the amount of water used per acre, but, as events have shown, very little notice has been given to his remarks, and as there are a lot of people taking up irrigable land I hope these notes may be of some good. Very many acres of the land at present under irrigation will have to be manured before many years are over. I have had many years of experience in irrigating, and I would impress on all new settlers the utmost necessity of being careful not to put too much water on to their lands. If they do, it will mean a large expenditure in the near future in manure. It will lessen the yield per acre and sour the land so that it will take much time and expense to remedy the harm done by over irrigating or flooding the land.

---

When the hog seems to be losing the use of his limbs, feed less maize and more bran and oats chop. If the trouble is very bad, give eight or ten drops of nux vomica in feed twice a day. Keep the bowels open by giving an abundance of green feed.

---

**FIGHTING THE GRAIN WEEVIL.**—A cheap method of preventing the ravages of the grain weevil is given by N. N. Banerjee in the *Quarterly Journal* of the Bengal Department of Agriculture, viz., the employment of carbon bisulphide. The writer says: "The quantity required, provided the grain is kept in closed vessels, is very minute, not more than  $1\frac{1}{2}$  lbs. to each ton of grain. The bisulphide leaves no disagreeable taste or smell behind, and the quality of the grain remains unimpaired. When bags are used instead of iron cylinders, specially prepared for use in the bisulphide process, the protective influence of this chemical soon ceases and a fresh application of the bisulphide must be made. In either case this liquid may be applied as follows:—"A ball of tow may be held to a stick of such a length that it can be just plunged into the middle of the vessel containing the grain. The tow receives the charge of bisulphide like a sponge, and is then at once plunged into the sack or cylinder and left there, the mouth being tightly closed. When necessary the stick may be withdrawn and the charge (of 1 oz. of bisulphide to 100 lbs. of corn) may be renewed."



## **Sugar Cane Cultivation.**

### PRACTICAL INFORMATION FOR BEGINNERS.

WE have received a considerable number of requests during the last few months, more particularly from persons who have taken up some of the new sugar lands on the Zululand coast, for information with regard to sugar-cane growing, and, in accordance with these requests, we have pleasure in publishing some of the most useful of the information which we have immediately available. In the February and March, 1905, issues of the *Journal* there were two instalments of an interesting article by Messrs. A. N. Pearson and Alex. Parry, on "The Sugar Industry of Natal," and in the course of that article some practical information was given with regard to the preparation of the soil, manuring, planting, weeding and trashing, harvesting, etc. Those issues of the *Journal* are, however, now out of print, and we accordingly re-publish such of the information given as will be of most practical value to beginners and others.

In early issues of the *Journal* further articles on sugar-cane cultivation will appear.

#### VARIETIES OF CANE.

Besides the Green Natal, supposed to be indigenous, many imported varieties of cane have been introduced. At one time a variety known as China cane was extensively grown, but it suddenly succumbed to a species of smut, *Ustilago sacchari*, and had to be discarded. The other varieties tried are principally Lousier, Fotiogo, Bois-rouge, Imperial, Tamarand and Belle-ougete, said to be from Mauritius; Ribbon, Bourbon Yellow and Bourbon Purple, probably from Bourbon; also White Queen (one of the best in good seasons), Port Mackay, Gold Dust (white and red), and Rose Bamboo. None of these are now generally cultivated; they have almost everywhere been supplanted by a variety the correct name of which is unknown, but which is here called *Uba*, a name, it is said, formed of the only letters remaining legible on a damaged label attached to the variety on its first arrival in the country. Mr. Medley Wood thinks it was introduced by Governor Sir Charles Mitchell, who, on returning from a visit to India in 1884-5, brought two Wardian cases containing cane plants, only three of which were alive. These were propagated by Mr. Wood, the resulting plants being given to Mr. Anthony Wilkinson. It is generally admitted, however, that this cane was introduced in quantity by Mr. De Pass of the Reunion Estate. From a milling point of view, this cane is undesirable; it is thin, tough, wiry and fibrous, and the juice, it is said, needs special care in the treatment; mill managers say that from 10 to 30 per cent. more mill power is required for this cane

than for any other variety. But the planters like it, since it endures the uncertainty of the Natal climate better than any other variety yet tried; it is hardy, bears frost and drought, stools prolifically, recovers readily from locust attacks, is subject to no fungus pests, and but little damaged by white ants and the borer. It is successfully grown on the highlands of the interior as forage for cattle.

Within the last few years several varieties have been introduced from the West Indies, British Guinea, Mauritius, Queensland and Honolulu, the Department of Agriculture having co-operated with the planters for their importation. The Inanda Association have taken a leading part in this movement, and several of the canes have been propagated for distribution on their behalf by Mr. H. W. James, of Verulam. Some of those from the West Indies were sampled by the Department of Agriculture and analysed.

Hitherto it has not been the custom to analyse Natal canes, the chemist, in fact, being but little recognised by the industry, and therefore no exact comparisons of the juice of the different varieties as grown in Natal can be made. The following few statements of analysis are, however, available:—

*Uba Cane.*

|                                   |     |     | Average. | Maximum. |
|-----------------------------------|-----|-----|----------|----------|
| Total solids in juice (per cent.) | ... | ... | 20.32    | 22.79    |
| Sucrose (per cent.)               | ... | ... | 18.61    | 20.79    |
| Glucose (per cent.)               | ... | ... | 1.18     | 1.27     |
| Non-sugars (per cent.)            | ... | ... | 1.53     | 1.73     |
| Glucose ratio                     | ... | ... | 1.00     | 1.30     |
| Purity                            | ... | ... | 91.6°    | 91.2°    |
| Per cent of juice in cane         | ... | ... | 84.28    | 82.30    |
| Per cent of fibre in cane         | ... | ... | 15.72    | 17.70    |

The above analyses show a large proportion of fibre in the cane, but indicate no inferiority in the juice; in fact, the quality of the juice, so far as disclosed by analysis, would not be readily surpassed anywhere.

The West Indian canes grown by Mr. James for the Inanda Association gave results as follow:—

|                                   |     |     | B.109 | D.95  | B.15  |
|-----------------------------------|-----|-----|-------|-------|-------|
| Total solids in juice (per cent.) | ... | ... | 15.31 | 17.04 | 16.78 |
| Sucrose (per cent.)               | ... | ... | 12.68 | 15.83 | 15.19 |
| Glucose (per cent.)               | ... | ... | 1.78  | 1.28  | 1.37  |
| Non-sugars (per cent.)            | ... | ... | 1.85  | 1.93  | 1.22  |
| Glucose ratio                     | ... | ... | 14.17 | 1.78  | 2.46  |
| Purity                            | ... | ... | 82.8° | 92.9° | 90.6° |

The samples were gathered unseasonably, and the juices were dilute, but the purity and glucose ratio of the last two samples were good. In fact, the analyses generally show that, so far as quality is concerned, the soils and climate of Natal admit of can being grown here as well as elsewhere.

## SOILS.

The soils of the planting districts vary considerably, there being light grey sands, red sands, light loams, chocolate loams, sandy clays of all degrees of texture, grey alluvials and black alluvials. Many of these soils may be on the one farm, and even in one cane field. The prevailing soil is a red or chocolate ferruginous sandy loam, light in texture and easy to work when once broken up. This class of soil is often very fertile when first cleared of bush, and has been known to give yields in good seasons of four and five tons of sugar crystals per acre from the plant canes. At one time the cane was grown exclusively in the alluvial flats, some of which have been in continuous cultivation for 40 years, and still yield well. But many are of poorer quality, and as crops grown in them are subject to flood and frost, it has been found advantageous to plant on the hills, even on the steeper slopes where only hand labour can be applied. According to Mr. Wm. Campbell, "tambootie grass" land is excellent for cane.

## PREPARATION OF THE GROUND.

In newly-cleared bush land the canes may be planted without ploughing. The bush having been cut, the timber stacked and the scrub burnt, holes may be grubbed out with hoe and axe, and the cane planted straight away. Grass land, however, requires to be broken up, allowed to lie for a time, and then cross ploughed and harrowed. For planting old cane lands the ratoons are ploughed out—with the mould board plough, and recently with the disc plough—and the land is then cross ploughed and harrowed.

## MANURES.

Very little manure is used other than mill refuse, but in the neighbourhood of Durban stuff is carted out from the Corporation stables, and in a few cases small quantities of artificials and bone dust are applied. Experiments now being conducted by the Department of Agriculture, both on the Coast Experiment Farm and on private farms, suggest that many of these lands may be materially benefited by the judicious application of phosphatic manures.

## PLANTING.

The cane is planted in rows five or six feet apart, or even nearer in poor land, and further apart in very rich land. The land is either drilled out with the drill plough working 9 or 10 in. deep, or it is holed out in lines by hand hoes, holes being made 1 ft. wide, 8 or 10 in. deep, and  $1\frac{1}{2}$  to 2 ft. long, a space of from 6 to 18 in. being left between each. Sometimes whole canes are used for planting, these being laid two together in the drills; or the canes are cut into lengths of 5 eyes to each; many, however, prefer only the tops which have been cut off when the canes are harvested for the mill. These are laid, two, three or four together, in the holes or drills, at distances of 1 to 2 ft. apart. The

cuttings or sets having been planted are loosely covered with about an inch of soil. As the young shoots grow up, the covering of soil is increased until the drills or holes are filled. The shoots appear in from 10 to 20 days, according to the weather and the vitality of the sets. The general time for planting is August to September, but it may be done as late as December and January.

#### WEEDING AND TRASHING.

The weeds are kept down until the cane grows sufficiently to cover the ground. Later on the crop may be trashed or not, according to individual preference and the labour available. Trashing, by which term is meant stripping off the dead leaves and leaving them to rot on the ground between the rows, is an operation regarded as essential in nearly all cane-growing countries, the object of it being to open out the crop to air and sunshine, the latter especially being considered beneficial in promoting sugar formation. In Natal the utility of the operation is by many called in question, more especially as applied to the thin-leaved Uba cane, and it is undoubtedly the case that many excellent crops are grown with no trashing save one shortly before harvesting. Where labour is scarce, trashing has been done with the lucifer, the dead leaves being swept off by fire. But this burning is universally condemned by the central mills, for, as might be anticipated, it injures the working quality of the juice.

#### HARVESTING.

The crop is ready for harvesting in from 20 to 24 months. This remark applies not only to the first cutting—the plant canes—but also to the subsequent ratcon crops. Thus, if five cuttings are obtained from the one planting, that is to say, one cutting of plant canes, and four cuttings of ratoon canes, the crop may occupy the ground ten years. In other countries the usual time for maturing is from 12 to 14 months. So long as land is plentiful, a cutting every two years has no grave disadvantage; but, with increased settlement and higher land values, it would be a distinct gain if the period could be shortened. The question is one for investigation at the Experiment Farm. The average time of maturity is said to be from the middle of September to the middle of December; but cutting generally commences in August and continues into January; indeed, the shortness of labour and limited capacity of many of the mills often cause the harvesting to extend over nine months, or even right through the year. With a growing industry, this shortness of mill capacity, with its obvious disadvantages, must always be experienced. It is a defect which time alone can adjust.

The cut cane, having been divested of its leaves and suckers, is put into trucks which run on tram lines, portable or permanent, and is hauled off to the mill, or to the main railway for transport to the nearest



central mill. Animal power is generally used for hauling on these tram lines; but on some estates, such as those of Reynolds Bros., Ltd., of Esperanza, Messrs. Pearce Bros., at Lower Illovo, and the Reunion Estate (Mr. De Pass), small locomotives are employed. The Natal Government Railway carries cane from the estates to the central mills at special rates. Last year it carried 57,515 tons in this way, a revenue of £1,334 being earned thereby, the average distance of haulage being 11 miles.

After the cane has been cut, the trash, or dead leaves, is raked to the middle of the space between the rows, being afterwards buried after rotting, or raked back when the ratoons are above ground; or the trash between the first and second row is raked over into the space between the second and third row, and so on, so that every alternate space is left free for cultivation. In some cases the trash is burned just as it lies on the ground, the practice being advocated as a means of destroying grubs. The ratoon crop which springs up is treated in every way the same as the first crop after planting. From two to four ratoon crops may be taken, but each succeeding one is less in quantity than the first. From the figures available, showing the yield of cut cane to the acre, it appears that the average probably does not exceed 20 tons; 30 tons is considered a first-class crop, though on newly cleared bush land 60 tons and more have been obtained.

#### FACTORY OPERATIONS.

The treatment at the mill differs in no important respect from that in other countries. At all the factories the cane is crushed, the diffusion process not having been introduced into Natal. The following brief resume of the operations at one of the largest factories will give an idea of the treatment at other large factories. At the smaller mills the operations are, of course, less complete. At this factory, which has a capacity of about 260 tons of cane per diem of 12 hours, cane from outside suppliers is bought by weight at a uniform price per ton, but if the juice falls below an arbitrarily fixed Beaume standard, a reduction is made in the number of tons credited. The cane is tipped from the trucks on to an endless carrier, which conveys it to the mill. The mill is double, consisting of the first three rollers, an intermediate carrier for maceration, and the second three rollers. It is reckoned that 65 per cent. of juice is obtained out of Uba cane, and 70 to 75 per cent. out of softer canes.

The juice, after straining, is sent from the mill tank by a monte-jus to the sulphuring tank, from whence, after injection of sulphurous anhydride and heating, it is passed to the tempering tanks, where it is limed until neutral; it then circulates through three vertical heaters, passing afterwards to subsiding tanks; from these the clear juice is

syphoned off and gravitated to the quadruple effect, the bottom being pumped into filter presses, from which the juice runs to the quadruples, the cake being thrown to the compost heap. From the quadruples the concentrated liquor goes to subsiders, and the clear liquid from these passes to the vacuum-pan feed-tanks, from which it is sucked into the vacuum-pans. There are in the factory in question three of these pans, two of copper of four and six tons capacity, and one of iron of twenty tons capacity. From the large iron pan the massecuite is dropped into a mixing tank, and from this it passes to six water-turbine centrifugals. The massecuite from the copper pans goes to 10 smaller centrifugals driven by belting. The first sugar from the centrifugals are marketed for direct consumption. From the molasses four other grades of sugars are obtained, and these are sent to the refinery. The fuel used for the boilers is the megass—the exhausted cane from the mills—supplemented by a proportion of coal. At most other factories megass alone is used, efficient megass furnaces being installed. To prevent over-straining of the roller mills toggle gearing or hydraulic attachments are adopted in some cases. At several factories various trade preparations of phosphoric acid are added to adjust the neutrality of the juice after liming and before defecating. Taylor bags are still commonly used instead of filter presses, the bags being in some cases supplemented by “eliminators.” At the Esperanza Factory a Yaryan triple effect has been installed. Generally speaking, the large factories are up to date, so far as the machinery and processes are concerned.

It is stated that it takes variously from 12 to 20 tons of Uba cane to produce one ton of crystals. A first-class factory has been known to obtain one ton of crystals from  $12\frac{1}{2}$  tons of Uba cane as a season's average; that is to say, every 100 tons of cane produced 8 tons of crystals. These crystals, of course, would not be pure sugar; they would probably contain  $7\frac{2}{3}$  tons pure sugar. Assuming the cane to have contained originally  $13\frac{1}{2}$  per cent. of sugar, there would have been obtained  $13\frac{1}{2}$  tons of pure sugar from 100 tons of cane had it all been extracted. What then became of the balance? In the absence of systematic chemical examinations, it is impossible to say, but probably 3  $1\frac{1}{2}$  tons passed away in the megass and were burnt, 1-3rd ton was lost in the filter residues and waste waters, and 2  $1\frac{1}{3}$  tons passed away in the molasses. The latter is not lost, as there is a good market amongst the natives for molasses. At the small mills worked by the planters themselves, it very likely requires as an average 16 tons of Uba to produce one ton of crystals. With other canes, a good factory has been known to produce one ton of crystals from less than  $11\frac{1}{2}$  tons of cane as a season's average. The most serious loss at the large factories is in the megass, and the only known way of preventing this is by the adoption of the diffusion process.

## Notes on Manuring.

By ARTHUR E. DIXON, F.G.S., M.E.

To restore fertility to the soil is the object of manuring, which consists in adding some substance which shall itself serve directly as a food for the plant, or shall so modify by chemical action some material already present in the soil as to convert it into a state in which the plant may take on some advantage.

Deterioration is quickly taking place on all land that is exposed to the sun and rain of this climate, and we are under the necessity of placing food in the ground for the crop we are going to produce. The following are substances which may be added as direct food for plant life:—

1. *Gypsum*, or sulphate of lime. They are capable of decomposing the carbonate of ammonia which is either brought down by the rain or evolved by putrefaction in the soil, and of converting it into sulphate of ammonia.

2. *Phosphate of Lime*, or bone ash, which is most commonly converted into the soluble superphosphate of lime by sulphuric acid before being used as a manure. Its action is slow and healthy.

3. *Chloride of Sodium*, or common salt, serves as a source of sodium in contact with carbonate of lime.

4. *Nitrate of Soda*, yielding both soda and nitrogen as food for the plant; is quick in its action.

5. *Silicates of Potash and Soda* are useful for all cereals.

6. *Green Manuring*, or plant life ploughed into the ground and left to decay.

7. *Bones*, which furnish carbonic acid and ammonia by the putrefaction of their gelatinous matter, supply as well phosphate of lime.

8. *Urine*, yielding much carbonate of ammonia by the decomposition of the urea and uric acid and an abundance of the phosphates and other saline matters required by the plant. To use this much-neglected manure cattle kraals might be cemented out and drainage made into a receiving pit, when such liquid urine, watered over the upspringing plant life, would give a much heavier yield of crop.

9. *Lime* acts chemically upon the constituents of the soil so as to render them more serviceable to the plant, and modifies in a very important manner both the organic and mineral portions of the soil. Its action on the former consists in promoting decay; on the latter it asserts the decomposition of minerals, particularly those which contain alkalies, converting them into soluble forms.

10. *Fallow Ground*. In some cases fertility is restored to exhausted



soil by allowing it to lie fallow for a time so that, under the influence of air and moisture, chemical changes may take place and again replenish food for the plant. This does not necessitate in all cases that cultivation shall cease, but that a rotation of cropping shall be properly carried out. The possibility of this rotation is partly accounted for by the difference in the mineral food removed from the soil by different crops. Thus turnips require alkali and lime, wheat much alkali and silica, barley lime and silica, clover lime. Sugar and starch are constructed in the plant from carbonic acid and water. That gluten and added life result from the mutual compounding of soil with ammonia, phosphoric acid, and phosphates, so that it is well to study what each plant requires, so as always to keep your land stocked with abundant life. Those who take this trouble, and use useful manures and sound cultivation will in the long run be the most benefited by having heavier crops of better quality, with smaller acreages under cultivation, and food for every season of the year.

There are kyanite, lime, gypsum, soda and alkali deposits in this country awaiting development for the use of the agriculturist. There is needed a revolution in the way farm yards and stables are worked and built, so that the thousands of pounds' worth of manure be not wasted while the owner is buying the imported article.

If the system of rotation were adopted, the utilization of farm yard manures acted upon, and the local deposits developed, yielding cheap and useful manure, we would see that our exports would be increased.

It would seem that only adverse circumstances and hard times would bring about progressive movements in farming, but it is helpful to see that in certain districts there are progressive farmers who are irrigating, manuring and cropping their land, and many who see their development are looking into the matter, and it is to be hoped that each farmer will so educate his children that they will be able to know for themselves what is best for their land and not be dependent on the wits of others or live on the imports from foreign countries, but become self-dependent.

---

As long as the old sow is doing well do not discard her, unless there is a certainty that she can be replaced with something better.

---

Painting the tools is one way to preserve them. Paint the shovels and mould boards with axle grease and the rest with real paint. It avoids rust and decay.



## ***Export of Wattle Bark.***

### QUESTION OF GRADING.

AN important meeting of prominent wattle-growers was held in the Legislative Assembly on Friday, 11th December, at the invitation of the Minister of Agriculture, to discuss the question of grading of wattle bark intended for export. There were about 40 persons present, and among them were, besides the Hon. W. A. Deane: Colonel Geo. Leuchars, Sir Geo. Sutton, Hon. Mr. Angus, Rev. James Scott, Mr. W. L'Estrange, and Mr. Holley.

The Minister of Agriculture, after thanking them for attending the meeting, said that the reason why the meeting had been called was that the Government realised that it was necessary that some action should be taken in regard to the control of the export of wattle bark. The industry was one that was growing, and one that was most successful in the Colony. Advices had been received by the Government recently stating that should the output be four times what it was there would be a good market for it. There was no doubt that the export had been going on in a haphazard way, and it would be criminal on the part of the Government to allow this to continue, and it was deemed advisable to take action, but before doing so the Government had called them together to discuss the question. Before reading certain documents he had, he would like to read what had led up to the position. On July 30, 1907, it was deemed advisable to take action, and at that time there was no Wattle-growers' Union. A meeting, however, was convened between some of the most prominent growers and shippers in order to convey to them the ideas of the Government on the subject. There was an idea of introducing an Act which would embrace all agricultural produce under Government supervision. The meeting, however, was not unanimous, and the matter was allowed to drop until the Natal Wattle-growers' Union was formed. When the first meeting was called the Union did not exist. Seeing that a Union had been formed, which had the interests of the industry at heart, the Government approached the Union, and the matter was put before them. He read a letter from the President of the Union, in which it was stated that it was feared that the Government's suggestions could not be carried out. Subsequently, a letter was written to the Secretary of the Union, asking for a list of members, and also for a list of prominent wattle-growers who were not members of the Union. The Committee did not furnish the Government with this list. Had they done so, and had the list shown that wattle-growers in Natal were fairly represented in the Union, the

matter would have been put in the hands of the Union, who would have been asked to call a meeting. There had, however, been no alternative but for him to call the present meeting, and he had it advertised in the papers. Mr. Deane then went on to read a letter addressed to the Natal Wattle Growers' Union. The letter, which was dated July 16th, referred to the bad condition of the Natal shipments during the first three or four months of the year, and stating that the stores at Home were full of bad bark which the tanners had refused to accept. It was further stated in the letter that damages to the amount of £3 10s. per ton had been caused to importers, and that it was a pity that, after the good name Natal bark had had, carelessness on the part of farmers should again have brought discredit on the bark, and caused a collapse of market prices. The letter stated that parcels of bark would have to be submitted to arbitration at Durban by experts, and buyers must have the right to refuse any parcel which was below a certain standard.

Mr. Deane was asked who wrote the letter, and replied that it came from G. Monhaupt & Co.

Proceeding, the Minister of Agriculture quoted from the *Bulletin* of the Imperial Institute, suggesting that the confidence of importers of Natal bark might be shaken by the export of withered and blue wattle bark. He (Mr. Deane) had letters complaining of the adulteration of bark. One man had written to say that some of the shippers had purchased both black wattle and blue and had mixed them. That might or might not be true. Another letter addressed to himself stated that negotiations were being made for an initial shipment of Natal bark to Australia. The business had practically been concluded, the only hitch being that the writers had received a request from the buyers that the shipment should be accompanied by a Government certificate as to quality and weights. Continuing, Mr. Deane said the letters he had read were strong arguments for the control of the export of bark. He knew that the wattle-growers—although they agreed in principle with what he had said, and with the object of the meeting—saw difficulties in the practical carrying of them out. They had been called together to see what those difficulties were. In Australia they had faced those difficulties, had built up a good trade in bark, and had beaten Natal for a time in the market.

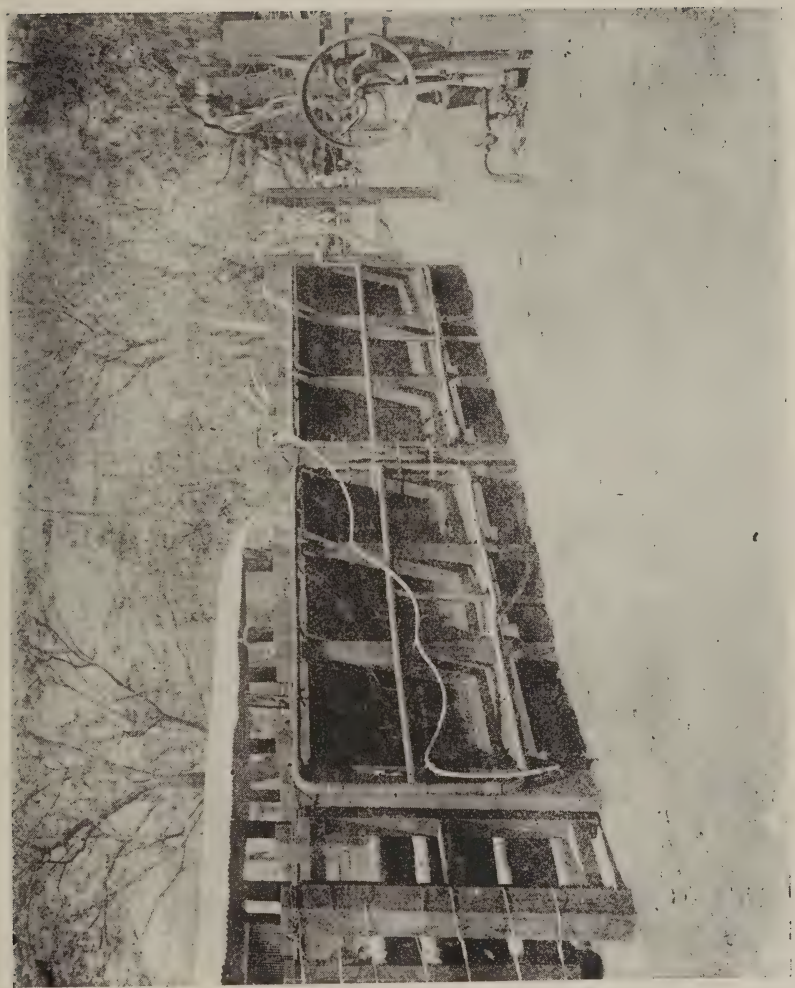
A voice: "Wrong."

Another gentleman: They shipped six hundred tons last year.

Mr. Deane said he had information that 800 tons were shipped from Australia.

Another gentleman: I beat Australia by £1 a ton last year in the open market.

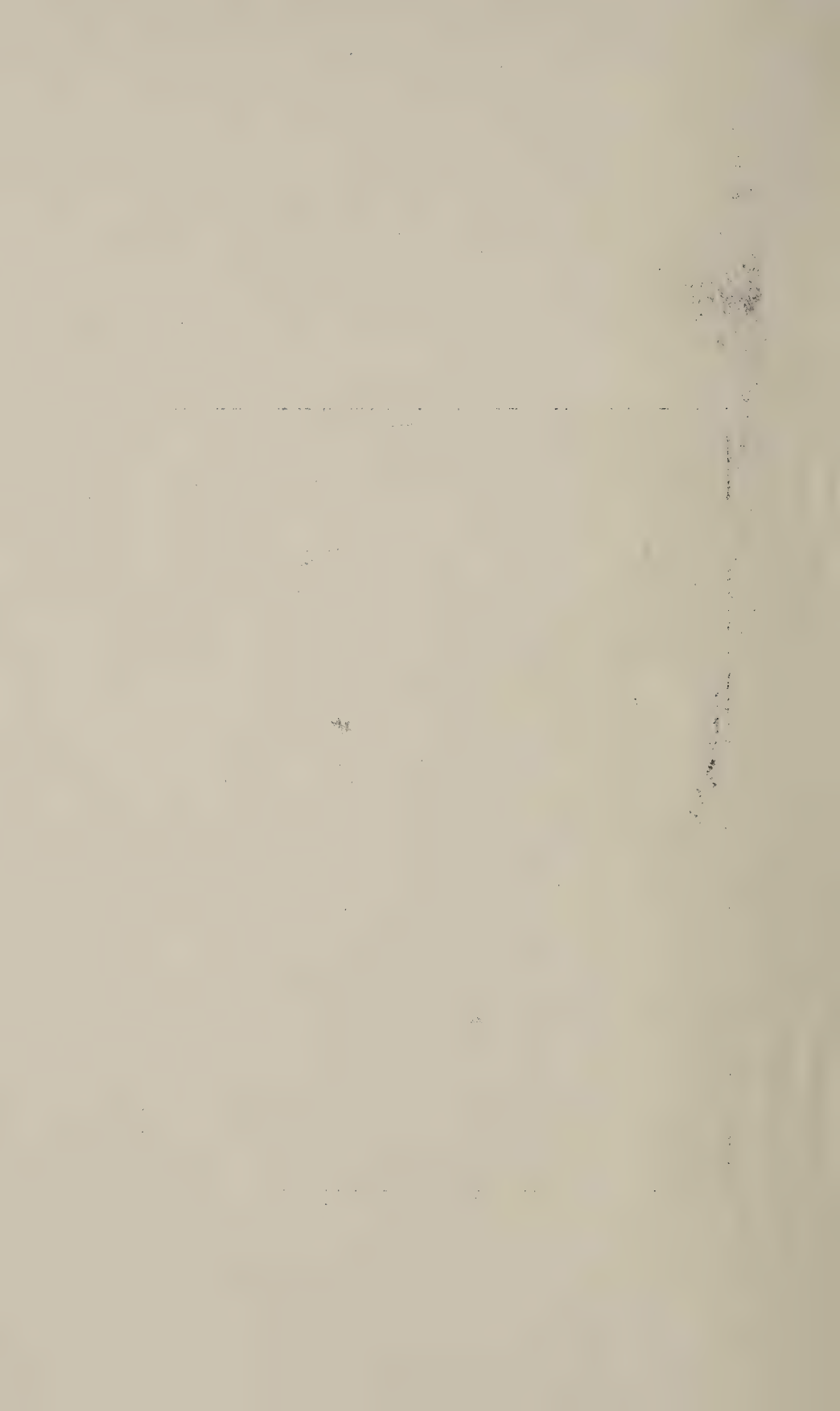
Mr. Deane read a cablegram from the Agent-General, acknowledging a message of May 5th and stating that the prices of bark were:—



SPRAY-PEN.—I.

Spray-pen to hold two beasts.

(See Article.)





Natal bark, £7 10s., and Australian, £8 to £10. (Cries of dissent.) Continuing, he said he wanted to clear up any misapprehension that might be in their minds. The Government was not unnecessarily interfering with the industry, but he had called the meeting in their interests. They were shipping bark, and if there were a dispute it was submitted to arbitration, and in nine cases out of ten the decision was against the exporter. All the Government wanted was some scheme that was simple and practicable. He suggested that they should have two grades of bark, the first grade to be "fair average quality," and any bark that was not of fair average quality to be "below grade." There were four essentials required to make up fair average quality. They had heard it mentioned that experts were required for this grading work, but he held that they did not sell their bark on analysis. Fair average quality meant this—the bark must be dry; it must be of fair colour—let them not have any hair-splitting over it;—they did not want corky bark; and the fourth essential was that they must have mature trees. Did it require an expert to grade bark on those lines? ("Yes" and "No.") Had they a man in the Colony here to grade the bark, or did they think that the men who bought the bark were the better judges? If they established a grader here to pass their bark through on the conditions he had mentioned, could there be any dispute at the other end? If others thought the opposite, he hoped they would enlighten him on the point. Another burning necessity was this: What was the condition of things here with the small men last year? He knew that certain bark grown in Umvoti County was bought without question, but last year the small men had to sell their bark at 3s. to 3s. 3d. per 100lb. to local buyers. Was there a corresponding reduction in the Home market? No, there was not. That was the reason he had sent the cablegram to the Agent-General, because the prices were inconsistent. At Home, the price was £7 10s. per ton, and here it was 3s. 3d. per 100lb. If they had a grading agency on the lines he indicated, they would put the little man in a strong position. The big man, perhaps, did not require that assistance, but it was the small man to whom he gave the greater consideration. In conclusion, he pointed out that they had a serious competitor in German East Africa. (Hear, hear.)

Colonel Leuchars said that, on behalf of the Wattle-growers' Union, which had held a meeting that morning, he wished to say a few words. They had had a meeting to discuss the Minister's proposition, and, without spending five minutes on it, it was realised that they could carry on the discussion to no good purpose until they heard what the scheme was. They had attended the meeting for the purpose of hearing that scheme, and he must express disappointment that Mr. Deane had not outlined some scheme by which they could carry out his suggestions. Failing such a scheme, the Wattle-growers' Union was not in a position to ex-

press any opinion on the matter, but he was authorised to read two extracts from the report which had been adopted that morning. One extract was:—"With the object of checking the growing evil of the export of inferior bark, schemes for grading bark for export and stamping packages with the Union's brand were carefully considered, but serious practical difficulties were encountered, and so far no entirely satisfactory solution of them has been found." With reference to the Minister's suggestion with regard to grading bark, the report stated that the Committee of the Union had been asked by the Government to express views on the subject. The difficulties were many, the report continued, some of them appearing to be insuperable. They would be difficult to get over, even with Government assistance. Col. Leuchars, continuing, said the Union had been in hopes of hearing what the scheme was, and, had he heard it, it had been his intention to ask the Minister to extend courtesy to the Union to the extent of adjourning the meeting in order that they might discuss the proposals. Failing any definite proposals, it was difficult, as he had said, for the Union to express any opinion beyond the opinion he had just read. The matter had been taken up by the Union, who realised the importance of sending Home bark of good quality. It had been considered by a Committee of the Union—by a Committee deeply interested in the subject, and by a Committee anxious to propound some workable scheme. In going into the pros and cons of the question they had had to admit that the difficulties were insuperable, and, until the Government were able to propound some scheme, which the Union had not been able to do, he recorded his vote against such **grading**. It appeared to be absolutely useless to appoint a grader at the Point. When they spoke of a grader, it meant that an expert was required. Where was that expert to be found? Had they such an expert in the Colony? He doubted it. The men best able to judge of the quality of the bark were men who were in such a position that they would not accept such an appointment at the Point. That was the chief difficulty. Other difficulties had been mentioned at their meeting that morning, but the one he referred to was one of the insuperable difficulties. Grading bark was a very different matter from grading mealies. In the case of the former, the sacks would have to be cut open and big samples taken out. No expert would be able to judge bark, except by analysis. Those were the **chief** difficulties he saw in connection with the proposals, and he must again express regret that the Minister had not put a definite scheme before them, so that they could express an opinion on it.

The Minister of Agriculture said he had hoped those present would explain their difficulties in regard to his proposals. He took it that they were all in agreement as to the principle. He would now give them a scheme for what it was worth. He held that they did not sell their bark

on analysis, and that the market required mature bark. Did it require an expert to judge bark on the four essentials he had mentioned—dryness, fair colour, no corkiness, and mature trees—the grader would have to open a certain number of bags, but need not open every bag. The bark that passed the test would be marked with the Government stamp, and they all knew the value of that. A lot of harm had been done by the wet bark that had been sent Home, and had moulded on the way. One such shipment would influence the buyers. The Government would consult the Wattle-growers' Union in connection with the nomination of a man to do the grading. They had such men in the country, and they were just as well qualified to do the work as the men on the other side. They had no Act of Parliament which could make grading compulsory, but they could do it in this way—all bark travelling through the Government Agency would be charged present rates, and any bark going otherwise would be charged a higher rate. Did they admit that adulteration went on? ("Yes" and "No.") Was not the industry of such importance that they should provide against adulteration? They could do this by legislation.

The Hon. Mr. Angus said that the meeting appreciated the Minister's efforts to take some action in order to improve the conditions of the bark industry; but, speaking with a very long experience of the industry, he would like to point out some of the difficulties. With reference to the Minister's remarks, he said that corky bark was commanding the highest price in the market at the present moment; whilst they had had frequent orders for immature bark. As regards analysis, he said that all bark was analysed. He then pointed out difficulties in the way of obtaining a competent grader, and said that Government interference would prove a serious hindrance to the industry.

Sir George Sutton also pointed out several difficulties.

Rev. Mr. Scott thought their thanks were due to the Minister of Agriculture for the efforts he was making in the interests of wattle-growers; but he thought that interference on the part of the Government on the lines suggested in the industry would really do more harm than good. He suggested that the best course would be to make it severely punishable to ship blue bark mixed with black.

Mr. L'Estrange said, with reference to Mr. Deane's remark that 3s. 3d. had been the price received by growers on the Greytown line for bark, that the bark for which such a price was paid must have been of very low quality. The price he paid was usually nearer 3s. 9d. With regard to the question of mature and immature bark, he said that he once, as an experiment, sent to England a lot of 3½-year-old bark, which he clearly marked "young bark" and sold as such in the open market. For this immature bark he got a higher price in London than for a consignment of older bark sent at the same time.



He pointed out, furthermore, that the bark at the tops of trees was immature, but was usually mixed with the mature bark—growers could hardly be expected to sort it out. A grader might easily disqualify a consignment of bark because he found in it immature bark.

As regards blue bark, the remedy was to be found in England. Blue bark would not sell, and consignments containing blue bark would be marked by buyers and future consignments from the same source would be shunned. He said that he found more care in regard to the exclusion of blue bark had been taken this year.

Mr. Egner said that the best graded bark had always been the pulse of the market; but he considered that the suggestions that had been put forward at that meeting for the grading of bark were simply impossible.

Another gentleman said that he had been informed that bark from trees grown on an ironstone soil realised higher prices, and upon enquiry from an English firm he had found that such bark contained a larger percentage of tannic acid. Continuing, he said that the commission agents were largely responsible for the mixed and inferior bark which was shipped, as they did not care in the least what sort of bark they bought.

Colonel Leuchars referred to Mr. Deane's suggestion that growers who did not grade their bark should be penalised in the matter of railway rates. Mr. Deane had said that he wished to help the small growers in particular; he (Col. Leuchars) wanted to point out that it would be just the small growers who would be penalised by any differentiation in the matter of railway rates, and not the large growers, for this reason: the small grower could not afford to put up sheds for the proper drying of his bark, which consequently often suffered deterioration from exposure to the elements. On the other hand the large growers could afford to erect such sheds, and their bark was always of much better quality. It would thus be the small grower who would suffer, by having to pay the suggested heavier railway rates.

Mr. Newmarch said that private brands were sufficient; and buyers could depend upon these. Touching on railway rates, he said that the industry had never received proper consideration. It had always been penalised and rates had been raised often without any proper notice to the industry.

Mr. Pollitzer suggested that a number of members of the Wattle-growers' Union should be selected to form a committee to discuss ways and means whereby means could be found for the issuing of a Government certificate, so that those who adopted it would be free from the clique of buyers oversea who controlled a large market for this product.

Mr. Deane said that the meeting had been called to discover some workable method of grading, and to consider the whole question. He pointed out that the so-called "penalising" was the method in vogue at



the present time in regard to another Natal product that was being exported oversea—mealies. The Government wished to assist them from the disabilities they were suffering under. At present they shipped their bark subject to arbitration at the port of receipt. He could see they were opposed to any action on the lines he had suggested. He did not think the small men were the chief delinquents in regard to bad bark. They had information from the Commercial Agent, at Home, that no Natal bark was used in France, and he thought action might be taken in that direction. The Government would not take any action unless they had the Union behind them.

Sir George Sutton thanked the Minister for calling them together, and suggested that the question should be left open for further consideration.

The Minister promised to communicate with the Commercial Agent, with a view to ascertaining the opinion of the Hamburg authorities on the question.

The meeting then closed.

---

It is proposed to set apart a portion of the Richmond Commonage as an outspan, and notice has been given that "persons having objections to the setting apart of the said piece of land for outspan purposes are required to state, in writing, within three months from date hereof, to the Magistrate of the Division of Richmond, such objections as they may have to the situation and extent of the said piece of land." The piece of land in question is about 90 acres in extent and is bounded northwards by the Illovo River, eastwards by Lots 2 and 3, and otherwise by the remainder of the Commonage.

---

**RUSTY MILK CANS.**—Of the many things which affect the quality of cream, rusty milk pails and milk cans are the worst. It is not uncommon to see a creamery patron deliver his whole milk to the creamery early in the morning, fill up his cans with skim milk and let them stand around two or three hours while he does shopping. Then the cans are taken home and emptied only when the milk is wanted for feeding. No wonder these cans become rusty. They should be emptied at once, washed with warm water, scalded, and then put in the sunlight where they can air. Do not leave the cans about from ten to eighteen hours and then try to clean them up with soap. Scour with salt occasionally, and see yourself that they are cleaned properly.

## **The "Natal" Spraying Device.**

By H. WATKINS-PITCHFORD, F.R.C.V.S., F.R.S.E.

It is not intended here to re-open the somewhat threadbare subject of Dipping *versus* Spraying. Both processes have their advocates, their merits, and their drawbacks. No device for the spraying of the individual beast can claim the advantage given by the rapid plunge in and out of the dipping-tank where a large herd has to be dipped in a limited time. On the other hand, the expense of the construction of a large dip is prohibitive where only a few cattle are concerned, while the cost of the provision and maintenance of a large quantity of dipping fluid—say 2,000 to 3,000 gallons—is also an item apart from considerations of necessity of periodic renewal, the shock to the system of weakly or pregnant animals, or the drawbacks of driving long distances to a common centre such has so often to be practised at present where the system of dipping is adopted.

Perhaps the chief objection urged against the system of spraying in the past has been, firstly, the necessity of complete wetting of all parts of the beast, and, secondly, the time occupied by the process even when hastily performed. In fact, if these two drawbacks could be removed the vexed question of dipping *v.* spraying would be relegated to the museum of such antique S.A. controversies as drenching *v.* inoculation in Lung-sickness, or bile *v.* serum in Rinderpest, etc.

Anything, therefore, which tends to lessen these objections of expenditure of time or want of thoroughness will tend to increase the value of the system of spraying, and it is towards the lessening of these objections and in order to render to every stock-farmer a more easily available method of tick-destruction that the present appliance here described has been devised.

With the use of the spray-pump for tick destruction we are all familiar, and recently an American portable appliance for the spraying of cattle while running through a tube or tunnel has been devised, whereby jets of water mixed with oil, are driven into the interior of the tube by a petrol or electric motor pump.

With the merits of the American device the writer is not able to deal, but reports speak well of its efficiency as a tick destroyer where the proper grade oil is used for mixing with the water forming the spray or jet.

Though the Natal device described below cannot claim the merit of portability, it is simple of construction and within the reach of stock-farmers who are threatened by the disease-producing tick, or are anxious to avoid the constant depletion which stock suffer from simple tick-worry.

In its essential features the spray-pen consists of a narrow drive or race which—instead of terminating in a deep tank of fluid as in the dip—runs right through into the draining yard or slope on the same floor level. The sides and floor of this run or race are made solid and impervious for about the last five yards, and simple bars of wood or iron are slipped through from one side to another to confine one (or two) beasts as they walk through. Fig. 1 shows the elevation or side of this pen, which is arranged to take two beasts (one, of course, behind the other and separated by sliding bars). On the left of the picture is seen a way-through gate which closes flush with the inner wall of the spray-pen. These gates are also seen in the foreground of plate II.

The double pen as shown is designed to take two beasts at one time, but where smaller numbers of cattle are to be dealt with the single pen or just half that shown in plate I. is quite sufficient. In plate II., although the photograph shows the entire length of two pens, the upper one only is in action, the crossbars making the division between the two. This upper pen also is fitted with the overhead arrangement of pipes, which has been added subsequently to increase the volume of fluid thrown upon the beast. Such addition, however, is not essential.

Upon the sides of the pen, as shown in plate I., the arrangement of supply pipes is seen. The supply pipe as it issues from the ground is 2 inches in diameter, but this is reduced to 1 inch for the spray pipes from which the fluid actually issues, and the pipes are so arranged that an equal pressure is exerted by the pump throughout the actual one inch spray pipes. Into these inch pipes are screwed the spray-diffusers, each of which can be regulated to deliver either a jet or a fine spray of fluid. Eight of these spray-diffusers are carried on each side, four above and four below, and these deliver a fine spray with considerable force. The spray produced by a single spray-pump is familiar to all; this effect is increased sixteen times in the spray-pen when two men are at the pump (as shown in plate III.) This suffices to surround the beast with a drenching cloud of fluid saturating the coat in some ten seconds, but, in order to reinforce the action of these spray-diffusers, the pipe system is continued overhead. These pipes are drilled with a fine drill so that the issuing jets of fluid are directed in a converging direction, those in front driving down with much force upon the head and ears of the beast, while the rear jets are directed somewhat forward, as shown in plate III. This arrangement more than suffices for a thorough drenching of the animal, which literally "does not know which way to turn," as no amount of turning suffices to avoid the searching effect of the spraying fluid. As it was found, however, that sometimes parts of the inside of the thighs, udder, etc., still remained dry, a system of floor pipes was put down, 2 1-inch pipes running the whole length of the floor and being cemented in flush with the surface of the same. These pipes were drilled



in the same manner as the overhead pipes, but were controlled by a special tap or lever, as it was found that the one pump was insufficient to produce a forcible floor spray when all the system was open at once (such as is shown in plate II.). The floor jets were therefore connected to the pump by a special length of piping and controlled there by a tap or lever, which is about to be opened by the assistant in plate III. This lever is generally opened by being pushed down by the foot of the native working on that side of the pump, and the pushing down of this lever suffices to throw the whole weight of the pump upon the two lines of floor jets, with the result that the beast sustains a sudden and unexpected assault from below, and leaves the pen after a vigorous twenty seconds' bombardment drenched in every part. After a short time spent upon the draining slope (which is a continuation of the whole ground plan), he is pushed forward into the paved drain-yard, where much of the fluid in his coat finds its way back again down the floor of the pen and through a fine gauze grating into the small square sump or tank, from which it is again drawn by the pump. This small tank is kept filled to overflowing so that the spraying fluid stands some 4 inches above the level of the grating which covers it, and through this shallow bath all beasts walk when entering the spray-pen. About 150 gallons of fluid is sufficient to fill this receptacle and to cover the sunken footway to the required depth. As a matter of convenience rather than necessity this small tank can be connected by a pipe with an ordinary 400-gallon tank at ordinary ground level. If this larger tank is filled with 400 gallons of the spray solution (which will be found a convenient amount to handle at one time), the smaller system of the floor of the pen is kept easily supplied to its proper height by the turning on of the tap for a few moments. When operations are finished a simple adjustment of stop-cocks suffices to pump the whole of the used fluid back into the 400-gallon tank—through another gauze strainer—to serve a similar purpose on many subsequent occasions. In this way no waste by evaporation or dilution by rain water is possible, and the composition of the 400 gallons is kept constant; which latter question of uniformity and constancy of composition is a consideration to which insufficient attention has been given in the past.

The above is in rough outline the "Natal" spray-pen. I have not entered here into details of measurement or material, but shall be pleased to give details to anyone who may wish to erect such an appliance. The cost of the spray-pen will naturally vary with the availability of material for walls, posts, etc. Sawn timber is preferable to rough for the latter, but not essential. The walls of the pen could, if desired, be constructed very efficiently of baked brick well tarred, but such essentials as the pump, piping and cement would, of course, have to be purchased. The average price should not exceed £25 to £35, and for this cost each homestead not





SPRAY-PEN.—II.<sup>3</sup>

Looking up, pen. The upper pen only is in action. Grating in foreground covers sump or tank from which pump draws and into which fluid returns. This grating, over which cattle pass in entering the spray-pen, is usually submerged to the depth of 3 or 4 inches.

(See Article.)



provided already with a dip could be supplied with an efficient appliance for the cleaning of stock at short intervals.

There is but small room for any part of the apparatus getting out of order. With the exception of an occasional renewal of pump-washers and attention to the small gauze or perforated zinc gratings (which prevent particles being driven into the pipes, so necessitating the pricking out of the sprays and holes), there is no reason why such an apparatus should not work regularly and efficiently for a long time. Renewal of the spraying fluid in the larger tank is necessary, of course, from time to time, but the cost of 400 gallons of efficient spraying fluid is not great, and with average care this will last for a lengthy period before renewal becomes necessary.

Concerning the exact composition of this fluid much will depend upon the frequency with which it is desired to apply it. Many of the preparations sold at present for the purpose of tick destruction are quite efficient when applied at moderate intervals, but disastrous in their effects when used more frequently. The subject of the efficiency, etc., of the preparations now on the market will be the subject of a report to the Minister of Agriculture at an early date.

With the formula shown below I have been able to spray a small experimental herd at intervals of five days for as many as twenty-five consecutive sprayings, and they have been maintained in a healthy and tick-free condition during that time while control animals herded with them have remained grossly infested. The composition of the spray therefore seems satisfactory. Four hundred gallons can be made at the approximate cost of 15s. or less.

The spray-pen is as available for the horse as the ox if it is advisable to spray the former in order to ward off the attack of the tick.

It is thus hoped that while the two great drawbacks of the spraying system, *viz.*, slowness and inefficiency, can be in a great measure removed, a stimulus will be given to the more frequent freeing of stock from ticks by a system which at a very moderate cost will maintain small herds virtually tick-free.

*Formula for Spray Solution for the Natal Spray-Pen.*

|                                              | s.    | d.    |
|----------------------------------------------|-------|-------|
| Soft Soap, 5 lbs., say @ 6d. . . . .         | 2     | 6     |
| Paraffin, 1 tin, say @ . . . . .             | 5     | 0     |
| *Glycerine, 5 lbs., say @ 10½d. . . . .      | 4     | 6     |
| Arsenite of Soda, 12 lbs., say @ 3d. . . . . | 3     | 0     |
|                                              | <hr/> | <hr/> |
|                                              | 15    | 0     |

\* An unrefined glycerine suitable for the purpose can be obtained at 4d. or 5d. a pound.

Dissolve the soap in about 5 gallons of hot water.

While still hot add the paraffin gradually, and beat or stir to a creamy lather.

Add the glycerine with further stirring.

This makes the soap emulsion.

Then dissolve 12 lbs. of arsenite of soda in a sufficient quantity of hot water, and when completely dissolved add cold water up to about 50 gallons. This can be mixed in the tank. The soap emulsion may then be gradually added and thoroughly stirred while mixing, and water can then be added till the tank is full (400 gallons). This mixture should be stirred before being allowed to flow into the smaller tank when preparing to spray.

---

The writer will be pleased to place full plans and details in the hands of any Firm who will undertake to arrange for the complete construction or the reasonable supply of the pump and fitted pipe-work to any Farmers desiring to erect a "Natal" Spray-pen.

---

## ***Breeding Sheep for Mutton.***

NEW SOUTH WALES EXPERIENCE.

THE VALUE OF SOUTHDOWNS.

IN our leading article in this issue we refer to the efforts which the Government is making to establish a market oversea for Natal mutton, and we reproduce a photo. (as a frontispiece) showing portion of the carcasses which were being shipped last month to England. The attention of farmers is accordingly now being directed towards the potentialities of the lamb as a meat-producer for export, and it is quite possible that ere long we shall reckon mutton among the most important of our products for the oversea markets. Our farmers must, however, give greater attention to breeding and feeding with a view to securing the best possible carcasses. No standard of excellence is too high for us to aim at, and we must study the requirements of the London market and endeavour to breed animals of the best shape and weight.

Australia and New Zealand have long been to the fore in this line, and we can accordingly gain much by a study of the results of their experience. We are importing considerable numbers of stud sheep from Australia—as we recorded in our last issue,—and this is a great step in the right direction—the improvement of our flocks both from the point



of view of the wool-grower and from that of the mutton-raiser. But we must know what we are importing—in other words, what breeds are the best; and in studying this question we can get considerable help by consulting Australian opinion founded upon experience in the raising of mutton for export.

Mr. G. M. McKeown, of the Wagga Experiment Farm, New South Wales, discusses the subject of breeding sheep for mutton in a very useful article in a recent issue of the *Agricultural Gazette* of New South Wales, and incidentally he touches upon several other points of interest. For some time at the Wagga Experiment Farm trials of cross-bred sheep have been carried out, primarily with a view to ascertaining the most profitable sheep for the comparatively small landowner, and the best methods of increasing the carrying capacity of his property; and the results of the trials are of particular interest. We take the remarks that follow from Mr. McKeown's article, as we feel that they will be read with much interest by Natal farmers at the present time.

The ewes which have given the most satisfactory results as dams are the first-cross Lincoln-Merino. They are roomy, and, therefore, the risk of loss at lambing time is far less than is the case with the pure merino. They may also be bred from at an earlier age than is advisable with the merino. Comparisons of risks in lambing have been carefully made and the results have shown that whilst the percentages of first-cross ewes assisted reached no higher than  $4\frac{1}{2}$ , it was necessary to give help to 28 per cent. of large-framed merino ewes when lambing to rams of British breeds in a good season. They are less nervous than the merino ewes, which is a great advantage, as when clearing stubbles or feeding off cultivated pastures the cross-breeds will work close to the fences without taking alarm at passers by, thus avoiding much trampling of crops and running about to the detriment of themselves and their lambs.

Trials are now being made of ewes by Border-Leicester rams from merino ewes, the breed being of good size and attractive appearance.

In selecting rams for breeding cross-bred lambs for market, care should be taken to obtain only such as are pure-bred, as loss of time and disappointment will certainly follow the use of grade sires. Such rams are purchased because they are offered at lower prices than those asked for pedigreed stock, and then the buyer blames the breed (of which he has never tried a pure representative) for failure to meet his expectations, which have been founded on results obtained by others from the use of pure sires.

Short-legged blocky rams showing good width of hind quarters, standing on legs set wide apart and carrying meat well down to their hocks, should be selected when mating for producing freezers.

It is not necessary that the farmer shall breed his own ewes, as it will be found more profitable to buy them as required from breeders on a

large scale. If found desirable they may be fattened and sold after having reared their lambs.

The following rams have been used at Wagga, *viz.*, Shropshire, Border-Leicester, Dorset Horn, Lincoln, Suffolk, Hampshire, and Cotswold, but some of them have had only a limited trial.

So far the results have been in favour of the progeny of the Shropshire rams from the Lincoln-merino ewes. The stock resulting from this cross are very shapely animals, making very rapid growth, dressed weights of 40 to 50 lb. at 4 to 5 months being numerous, while the drop in all seasons has been of even character, very few lambs having to be rejected at sale time. The wool has proved of fair quality and the quantity has been satisfactory, averages of 9 to 11½ lb. having been obtained from a small flock of wethers, while lambs at 3 months have averaged in a good season 3¾ lb. from a flock numbering some hundreds. Under adverse conditions their loss of weight has been less than that of any other cross-breeds, and their gain under hand-feeding in a season of drought has been greatest. In fact in one feeding test in which every other breed lost weight the Shropshire x Lincoln-merino showed a fair gain.

The Border-Leicester ram on the Lincoln-merino ewes has produced lambs of excellent type which slightly exceeded the Shropshire crosses in daily growth for the first four months. The risk in lambing to rams of this breed is somewhat less than in the case of any other cross, owing to the heads of the rams being smaller than others. Further, the rams possess the advantage of having faces free from wool, and bellies comparatively lightly covered, both points being of especial value in grass pastures with ripening seeds. The lambs, however, did not hold their condition so well as the first-mentioned cross, but in fair seasons they may be relied on to give excellent results.

In the past season the lambs by a Dorset Horn ram from Lincoln-merino ewes have surpassed all others in growth, and they give every indication of proving a valuable cross under New South Wales conditions.

Where sheep are kept on wheat farms—and no such farm should be without them—they should be turned on to stubble or fallowed land, as they perform valuable service in cleaning up fallen grain, and to some extent fertilising the soil, while at the same time they utilise weeds and other matter which would later become a source of trouble but for their agency. In cultivation paddocks it is of great advantage to sheep that shade be provided for them. When fertilisers are used for wheat and the land is later allowed to return to grass it will be found that cultivation has considerably increased its carrying capacity.

In a paddock of 300 acres which is alternately cropped and allowed to return to pasture, in a good season 1,400 sheep and lambs have been carried at the Wagga farm for five months, and then so little effect was apparent on the pasture that a large quantity of it was cut for ensilage.

It was only possible to operate on a limited area as the grasses and herbage ripened rapidly. In a later year the pasture would have carried at least twelve sheep for four to five months of the growing season, but it was not possible to stock it fully. In a paddock which had borne eight crops in ten years, two of which were fed off while green, within a fraction of four sheep per acre have been fed for five months, the effect on the pasture being hardly apparent.

Re-seeding has been carried out partly by the action of winds in carrying seed from surrounding paddocks, and partly from the grasses which will usually be found to some extent in cropped land. A quantity of grass seed probably lies dormant until the land is freed from crops for a time.

---

### SOUTHDOWNS FOR NATAL.

---

Last month we published an interesting letter, with photographs, from Mr. Chas. W. Holmes, pointing out the good qualities of the Southdowns and suggesting that these sheep would prove eminently suitable for South African requirements. Mr. Holmes' suggestion deserves the serious consideration of every reader who may be contemplating breeding sheep for export. An Australian authority—Mr. Alfred Hawkesworth, lecturer in charge of the Sheep and Wool Department of the Sydney Technical College, whose book, "Australian Sheep and Wool," was reviewed in these pages some little time ago—declares that, for crossing with the merino for mutton purposes and for early lambs, there is no breed to equal the Southdown, the meat being of excellent quality. As a mutton sheep, he further says, the Southdown is not surpassed, and is always classed as prime. No mutton is so succulent or gives such an amount of evenly-balanced joints carrying the same amount of meat, good and lean, with the fat so evenly distributed. Early maturity is also a special feature in their favour. The lambs grow quickly and fatten easily, and are ready for the butcher at an early age. The ewes are very prolific and excellent mothers, and will stand a bad season and appear well when other breeds fail.

We shall be glad to publish the views of any of our readers who have experimented with Southdowns, especially in the way of crossing with merinos. If we are to make a success of our exportation of mutton, we must breed up our sheep for mutton; and to do this we must know what are the best breeds. We hope, therefore, that those of our readers who can speak with some authority on the subject of Southdowns will write and give other readers the benefit of their views and experience.

## ***Inter-Colonial Agricultural Union.***

### FOURTH ANNUAL CONGRESS.

THE fourth annual Conference of the Inter-Colonial Agricultural Union of South Africa was opened at Bloemfontein on Wednesday, 25th November. The delegates were welcomed in the Town Hall by the Hon. C. H. Wessels, Minister for Lands.

The following delegates were present:—

*Cape Colony.*—Messrs. A. H. Guthrie, O. E. G. Evans, E. T. L. Edmeades, E. A. Edmeades, R. H. Struben, C. A. Pope, A. P. de Villiers, P. J. Joubert, S. van Aardt, A. A. Persse, J. D. Borthwick (Chief Veterinary Surgeon), Jas. Woodin, F. MacDermott (Editor, *Agricultural Journal*), C. G. Lee (President).

*Mozambique.*—Mr. O. W. Barratt.

*Transvaal.*—Messrs. I. van Alphen (Pretoria), D. M. Struben (Volksrust), W. H. Poultney (Johannesburg), W. Harvey (Heidelberg), A. G. Robertson, T. Nicholson, E. W. Hunt (Pretoria), Lockhead, H. A. Bailey, I. S. Bantjes (Zoutpansberg), R. Pope (Pretoria), J. J. Pienaar, B. Stilling Andersen (Pretoria), D. Gunn.

*O.R.C.*—Messrs. W. Ehrlich (President, Central Farmers' Union), W. C. Whittall (Vice-President, Central Farmers' Union), H. Ibbotson, C. W. Johnston, W. J. Palmer (Director of Agriculture), E. J. McMillan (Assistant Director of Agriculture), W. B. Fowler (O.R.C. Central Farmers' Union).

*Natal.*—Rev. Jas. Scott, Messrs. W. Craig, E. W. Evans, Jas. King, C. H. Mitchell, F. A. Johnstone, T. Burman, H. Wiltshire, H. Bazley, H. Watkins-Pitchford (Government Bacteriologist).

After Mr. Wessels had welcomed the delegates, the President of the Union (Mr. C. G. Lee) addressed the Conference as follows:—

### PRESIDENT'S ADDRESS.

Gentlemen,—I must first of all most heartily welcome all here assembled to the work of the fourth annual Congress of the Inter-Colonial Agricultural Union. I think we may also specially welcome the representatives of the various Governments who are present, as their attendance is a guarantee that, in spite of the hard times, agriculture is not losing its importance with those who have the ordering of our public affairs. The agricultural organisations of South Africa need a little encouragement and sympathy just now, for they have been faced by several severe set-backs. These have arisen in several ways, and among the many causes may be mentioned the following: First, a lack of interest



which has brought about a feeling amounting almost to indifference in some cases. This in turn is traceable to another idea which seems to have grown up that when we get closer union the new form of Government will be sufficiently powerful and wealthy to do anything and everything. Secondly, the depression has compelled Governments to retrench their efforts in supporting agricultural societies, and in other ways contributed to a feeling of uncertainty as to the future. And thirdly, the continuous formation of new organisations to represent some form or phase of agriculture during the past decade has led to a certain amount of reaction in that direction. Organisation is very necessary for every class of the community, more particularly one with so many and diverse interests as the farming classes. But this sort of thing can be overdone. If the farmer wishes to attend properly to his business, the time at his disposal for attending meetings is necessarily limited. It is therefore becoming more evident almost daily that a great need exists in South Africa for a sound and scientific system of organisation for the farming industries. It may not be within the province of this body to tackle a question of such magnitude and importance, but I feel that no harm can be done by calling attention to the waste of time and energy which goes on at present. With the increasing demand on the time of our leading farmers, I feel convinced that it will be found imperative before long to adopt measures of protection that will include a general economy of time and effort, the concentration of our forces, and prevent the wasteful diffusion of energies which now predominates. I am among those who firmly believe that the Colonies cannot afford to dispense with any of their recognised agricultural and farming institutions, but I am just as fully convinced that by bringing these organisations together and uniting their forces, the value of their joint efforts would be vastly superior to anything ever attained by the system now in vogue. It may be considered superfluous at a gathering of this nature to start preaching the doctrine of unity and the need for organisation in agriculture, and I admit it is in a sense, for this body has always stood for the general interest and the common good. But if it is looked at properly, it will be seen that this gathering is just the centre from which such principles can the more forcibly radiate. This Union speaks with a voice which is heard with respect throughout the length and breadth of South Africa, so it becomes the duty of us all never to miss an opportunity of advancing those great principles upon which this organisation is based—namely, equality and unity for all represented in its councils.

I trust no one supposes from what I have said that I have any fears as to the future of this Union, because if they think so they are seriously mistaken. I feel, on the contrary, that this Union must be maintained, as the need for its continued existence becomes more generally recognised the longer we maintain it. And the good work which lies before it is

practically unlimited. For instance, it should prove a powerful factor in maintaining the white man on the land against the increasing competition of the native cultivator. And not only keeping those on the land who are there now, but by gradually increasing their numbers and encouraging the gradual adoption of more advanced methods, to popularise farming in this country as to make it the principal occupation of the unborn millions we hope to follow us. It has been stated, and with some show of justification, that the time will come when the European of this country will be seriously taxed to hold his own against the increasing competition of the native producer. I am compelled to admit that in some few instances this has actually happened, but for all that I cannot admit that it is ever likely to become a really serious problem for the bulk of our people. In point of fact I am with those who conscientiously feel that such a state of things must not be allowed to arise, because there is room enough in South Africa for a white and black population so numerous as to dwarf into insignificance the present number of its inhabitants. In other words, room must be made for all, and it is in this direction that the efforts of a body such as ours must be directed if we are to justify our existence. The earlier pioneers of agriculture in South Africa practised much that will never be out of date, because it was based on sound principles, but the generations as they arise must always be prepared to advance with the times and adapt themselves to the conditions in which they find themselves. It is in such work as this that our Union can render most valuable service to this country. We shall always, I hope, proclaim aloud the pressing danger of the country tolerating the existence of plagues in its midst which put to the blush the afflictions of the ancient Egyptians, without making an effort to get them under control. We shall always, I hope, denounce the evils of overstocking our pasture lands, the neglect of the application of manure to exhausted lands, the lack of forethought and energy which allows the flood-waters of the drier districts to rush away to the sea while the lands and stock perish of drought. It is in these and the general neglect, not to say contempt, of advanced methods of farming, where the real danger lies for the white man in South Africa, not in the possibility of real competition from the native cultivator. It has to be admitted that the native's wants are fewer than ours, and as a consequence he may become a competitor for the Home markets in some lines, but the European has the great advantage of the many generations of enlightenment behind him, and if he maintains this advantage there can be very little fear. No sane person could advocate a policy of keeping the native back; it is for the European to see that he maintains his own lead.

This subject naturally leads one to that of education, for it is education, and more particularly scientific agricultural education, which has to be looked to if the position of the European is to be maintained and



### SPRAY-PEN.—III.

Spray-pen in action. The head and side sprays are open. The floor-spray is opened by the lever held in hand of white assistant to indicate its position.

*(See Article.)*





strengthened against the possible competition of the native farmer. It is with the future generations that we must deal, and we only do that by seeing that every facility is given to them to fit themselves for the responsibilities that will fall to them, and arm them to face any competition, whether from white or black, with the assurance born of knowledge. We should offer no criticism of existing methods; we should rather endeavour to graft on to the present system a new branch which our experience teaches us will bring forth fruit a hundredfold. What could be more interesting to a boy or girl than a few simple truths as to the wonders of plant growth, and the marvellous miracles which are enacted day by day in the soil at their feet? Yet these find no place in a modern education. Farming is becoming more fashionable, if I may use the phrase, than it used to be, and the danger now is that many will rush in with neither the knowledge nor the natural gifts which make a sound farmer, and thus more harm may be done. But if we start now and educate the tastes and ideas of the younger generation, in time they will be able to judge for themselves why certain farmers fail and others succeed. Besides that, the great want of the country is production; we are taking our place in the markets of the world, and we shall need all the brains and energy we can command in the future to hold our own there.

The period which has elapsed since our last Conference has shown us much that is of the greatest interest to this country. The past year has shown that South Africa can produce cereals at a profit for export. We have shipped away mealies and oats which have sold readily at good prices in the great markets of the world. In the case of mealies, I doubt if it was realised before that we have a soil and climate second to none in the world for the production of this most useful and valuable crop. And it is not only with these crops that a revelation has been given, but almost the same has happened with our lucerne for home consumption. Lucerne is now shown to be not only one of the main factors in the production of valuable ostrich feathers, but it has been proved to be almost invaluable in all branches of our farming. By its means many thousands of head of stock have been kept alive during severe drought which would otherwise have died of starvation; while more thousands have been fattened which would otherwise have made very poor butcher's meat. Yet we are only on the fringe, as it were, of the possibilities which this grand fodder contains for this country. People were slow to take it up because of much misapprehension and want of knowledge as to its real merits; but with mealies and lucerne we may claim that we have the most perfect feed for stock in the world. In addition to those, I hope to see another fodder plant introduced for the drier districts. The thornless cactus, which is now being introduced into other parts of the world, is worthy of a trial in South Africa, more particularly in our semi-arid pasture lands, for the "Spineless Opuntia" comes very near the ideal plant we have been look-

ing for in those parts. There is, naturally, a little uneasiness among the more conservative people, who have spent large sums in the eradication of prickly pear, at the prospect of any other plant of the same family being brought in, for fear it should prove as great a pest as that which they have taken such pains to get rid of. Their objections are based on the belief that, no matter how bare of thorns this cactus may be when brought here, it will soon develop its natural armament, and then the work of eradication will have to begin all over again. Yet all must agree that such a plant would be an almost priceless boon to our vast tracts of arid land if it could be propagated minus thorns. These plants produce a large quantity of juicy, succulent food, and will grow in the most inhospitable conditions, with little or no rain. A crop from such plants would make the lucerne hay go twice as far for feeding purposes, and stock would do better on such a mixed ration than on lucerne hay alone. This plant has been produced, thanks to the energy and perseverance of Mr. Luther Burbank, the great American plant specialist, and I trust it will not take so long to get its merits recognised as it has taken to get people to realise the full value of lucerne.

It is very gratifying to be able to note that all branches of farming seem at last to be on the advance in South Africa. Our Union must, therefore, participate in the general awakening. It is pitiable to see the thousands leaving our shores, and much of this might have been prevented had the land of the country been in a more advanced state of development. It is not to the interest of farmers to see people leaving a country, and this Union should seriously consider this question of emigration as one that intimately concerns themselves. Let the farmers ask themselves which is most likely to conduce to the welfare of the community—the driving of people away or inviting the desirable ones to share with us the good things South Africa is blessed with, so long as the newcomers are willing to subscribe to the national ideals. There will be no lack of newcomers if the land is developed and fitted to carry them.

I cannot conclude without a word or two upon the sympathy which is felt throughout South Africa for the alarming loss suffered by Natal through the ravages of East Coast Fever. But the people of Natal need more than sympathy, and it is hoped that in the discussions at this Congress something practical may be evolved which may help them. They fully deserve all we can offer for their uncomplaining bravery in so terrible a crisis. This disease has been most carefully watched in the Transvaal, and the Cape, so far, has managed to keep it outside her borders. All will be proud of the marked success attained by the Transvaal in getting it under control. In Rhodesia, too, success has been met with, and the people there, though they suffered heavy losses, were not discouraged, and are now busy re-stocking. Assuredly South Africa is a hard country, but its people seem never to lack courage and faith in the

future—one of the most valuable assets any people can possess. I feel that your deliberations will be carried out with the good feeling and moderation which has always characterised these gatherings, and my sincere wish is that your discussions will bear the fruit they deserve, and result in lasting good for our country and people.

For the notes which follow of the proceedings of the Conference we are indebted to the reports published in the *Midland News* (Cape Colony).

## THE PROCEEDINGS.

### SHIPPING FREIGHTS.

Three resolutions on the agenda relating to the Shipping Ring, and the reduction of freights, were carried *en bloc*, Mr. Edmeades pointing a brief discussion with the remark that something more should be done than reaffirm these hardy annuals. They should be pressed home by some specially appointed body upon the Governments of South Africa, another member suggesting that the Governments of South Africa should unite and bring pressure to bear on the Ring through the mail contract.

### EDUCATIONAL.

Mr. Van Alphan (Transvaal) moved:—

“That it is desirable to provide for the teaching of the principles of rudimentary agriculture in all rural schools, through the medium of object and reading lessons so arranged and chosen, that the scholars may have the opportunity of acquiring a sound knowledge of the principles governing the class of farming common in their locality.”

It was pointed out that the Transvaal had already taken steps in this direction.

Mr. Mitchell thought the subject should be optional.

Mr. Johnstone (Natal) could not support the motion. Children had enough to learn already. There was also the difficulty of finding suitable teachers to teach the elements of agriculture as well as the ordinary subjects.

Rev. Scott (Natal) disagreed with the previous speaker. All that was asked was that the children should be taught through a text book. He also suggested that the same text book should be used throughout South Africa.

Mr. De Villiers (C.C.) was opposed to mixing up agriculture with the school subjects. He thought when a boy had passed the school higher or matric. it was then time for him to take up the study of agriculture; then he should be sent to an agricultural school to be taught thoroughly.

Another member remarked that teaching a boy agriculture away from the land and implements was like trying to teach shooting without a gun.



Mr. Bailey said men must remember that the future South Africa would have to depend largely on export, and their children would have to compete with Colonies where the children were being trained in agriculture. Unless we followed suit in South Africa we should not be giving future generations a fair chance to fight for the markets of the world. They could not go too far in pressing home the value of agricultural education.

Mr. MacDermott said the Agricultural Union of the Cape had been pressing for something of the kind for some time, and the Cape Government had as a matter of fact established an Agricultural College at Elsenberg which took pupils and put them through a complete course of agriculture. As supplementary to that and in order to meet the wants of the farming community of the Cape, the Agricultural Department was having compiled an ordinary school reader devoted entirely to agricultural subjects, treated in as interesting a manner as possible. This "reader" included the elements of the beautiful mystery of plant life, without going into details that would harass the young mind. In short, the book imparted knowledge on the subject in the same way as some historical novels imparted knowledge of history. He thought the resolution should be amended so as strengthen the hands of those working in that direction. The idea was not to turn out children as agriculturists any more than by their attending wood-work classes one expected them to leave off as carpenters, but nevertheless wood-work classes gave to lads who had a gift for working with their hands a knowledge of the use of tools—it trained the hand as well as the eye.

Mr. Palmer (Director of Agriculture for the O.R.C.) approved of resolution 4. The idea was not to give an extended education in agriculture, but to teach children a little about Nature in a popular way, and he could not imagine any better way of doing it than by starting them at a young age to love Nature. That could be done during school hours without creating any great hardship or pressing them very much; it would come more as a pleasant interval in the work of school life. The idea embodied in the resolution was initiated by His Excellency Sir Hamilton Goold-Adams, who suggested to him (the speaker) and others that a little text book should be evolved that would interest children in the farm. He did not, however, know how they could have different sets of lessons for different parts of Colonies, and he moved the deletion of all words after "lessons" in the resolution.

Mr. Van Alphen accepted the resolution, which was carried.

Mr. Harvey (Transvaal) moved:—

"This Conference hopes that it will be found possible to recognise the teaching of agricultural science, as a section of the curriculum in Higher Grade Government Schools, throughout South Africa."

This was seconded.



Mr. Jas. King thought the subject should be optional. He moved as an amendment:—

“That this Conference is of opinion that agricultural resource should form one of the optional subjects in the curriculum of the Higher Grade Schools.”

Mr. Edmeades thought Congress was asking too much. The schools were not made up of the children of farmers, and half the parents of such children would object to such subjects being made compulsory. In the Cape there was an agricultural college and when a boy had passed the sixth standard or matriculation and he desired to be an agriculturist he would go to an agricultural college to get his teaching direct there. He thought it was the duty of every State to establish agricultural schools.

After further discussion the amendment was carried.

The following motion was carried:—

“That a Central Agricultural College for the whole of South Africa, supported by all the territories, would tend to promote very materially the development of the agricultural industry.”

*(To be continued.)*

---

A *Gazette Extraordinary* issued on the 8th December contained regulations which have been made under the provisions of the Income and Land Assessment Tax.

---

The introduction into the Orange River Colony of firewood, brushwood or timber grown in Natal, with the exception of newly manufactured timber and bamboo whipsicks, has been absolutely prohibited by a Proclamation issued by the O.R.C. Authorities. Neither may any barked wattle or other poles or second-hand manufactured timber, no matter where grown, which has been used in the construction of any building or article, nor vehicles, be introduced unless they are accompanied by a certificate, signed by a Justice of the Peace, Natal Stock Inspector, or member of the Natal Border Guard, and bearing date not more than seven days previous to date of introduction, to the effect that the articles introduced have been disinfected by being dipped in, or thoroughly sprayed with, a solution made by dissolving one pound of arsenite of soda in twenty gallons of water. The penalty for contravention of the provisions of the Proclamation is imprisonment for a term not exceeding six months.

## ***Agriculture in the Ixopo Division.***

MR. DEANE AND THE FARMERS.

PUBLIC MEETING AT STUARTSTOWN.

THE Minister of Agriculture, the Hon. W. A. Deane, addressed a public meeting, held under the auspices of the Ixopo Farmers' Association, at Stuartstown, on Wednesday morning, the 16th inst., at which were present Messrs. J. Schofield, M.L.A., A. H. Walker, M.L.A., F. E. Foxon, Magistrate; C. Hancock, President of the Association; W. Oakes, A. Stone, G. Francis, secretary; G. Cooper, and about 60 of the most prominent farmers of the district.

Mr. Hancock, in calling on the Minister to address the meeting, mentioned he had specially invited the Minister to come up, and felt assured that they would all approve of his having done so. There was no doubt that Mr. Deane had proved himself to be the most hard working and energetic member of the Government, and though they might perhaps not all agree with some of his proposals which he had brought forward from time to time, still they were satisfied that the honourable gentleman conscientiously believed that his ideas which he pushed forward were in the interests of the Colony, and they must acknowledge that in many instances such had proved to be the case.

The Minister of Agriculture, after thanking them for having so kindly invited him up, explained that, though up to that day he had been unable to pay them a visit, he was no stranger to their district, it being just forty years ago since he had been born in the Ixopo Division. He was more than pleased at the progress they had made, and had been very much impressed with the troops of cattle which he had seen, and which he considered would compare with any in the Colony. There was, however, one matter he had regretted to notice, and that was that in some instances he noticed that the calves were allowed to run with the troops. He thought that now they had the railway in their midst they should endeavour to send as much produce as they could by that line. They would be surprised to learn that their two Creameries were now turning out two tons of butter a day each, which was more than sufficient for the Colony's requirements. In addition to this there were hundreds of small private dairies, and, further, if the two Creameries were turning out double the present quantity they would still be sure of a ready market, on account of the excellent markets they had in the Cape and neighbouring Colonies. (Applause.) The Minister strongly advised them to

plant *Paspalum*, and mentioned he was pleased to notice that some of the more progressive farmers were doing so.

#### EAST COAST FEVER.

He had little doubt that the subject uppermost in their minds at present was East Coast Fever, and was very glad that their district was free from that disease, and hoped from the bottom of his heart that it would remain so. He, personally, must state that he wished for their own sakes that they would stop all movement of cattle in their district. The more he saw of the disease, the more he felt convinced of the danger of the disease spreading where such movement of stock was allowed. The Minister then referred to the recent outbreak at Mid-Illovo—the farm on which this outbreak had occurred was on the border of the Durban County Location—650 head of stock were involved, and the Government stamping out policy had been started the previous day. With regard to what he had mentioned as to the stopping of the movement of cattle, he wished he could burn the words into their ears that in ninety-nine cases out of one hundred the spread of East Coast Fever was caused by the movement of cattle. He was aware that the disease could be spread in other ways, but they knew that Government was taking every possible precaution, and under the recent Acts that had been passed any person maliciously carrying ticks was liable to five years' imprisonment without the option of a fine. They were thoroughly conversant with the policy adopted by Government, which as he had just told them had been put into action at Mid-Illovo. They must know that the longer infected cattle were allowed to remain on the veld so much greater was the risk of the disease spreading, and so much the longer time would elapse before cattle could be allowed to move on to it again without danger of infection. As bearing out his contention, the Minister gave various illustrations, specially mentioning the manner in which the outbreak that had occurred south of the Umkomaas had been stamped out. In giving them this illustration he had no wish to take the credit to himself, but wished to give it to the Advisory Committee down there, as also to the natives who had clubbed together in several cases and put up fences. He did not think it possible for the veld to have been more grossly infected than it had been where this disease had occurred ten months ago, and yet the disease had been stamped out and no further advance of the disease had since occurred. There was no doubt that this policy, to be successful, necessitated the areas infected being fenced, and the policy of stamping out would prove of no use in unfenced areas. As showing the enormous advantage of lands being fenced in, the Minister referred to the outbreak that had occurred on a Mr. Mooiman's farm near Glencoe. He stated that when Mr. Mooiman's cattle were being dealt with he had felt very much tempted to deal in the same way with the

cattle on an adjoining farm belonging to Mr. Craig. This gentleman's farm was separated with an ordinary single fence, and in order to prove the efficiency of a single fence it was decided to run the risk and not deal with Mr. Craig's stock, and he was pleased to state that Mr. Craig's cattle after 14 months were still free from East Coast Fever. He could not impress it on them sufficiently the importance of having their farms well fenced and not to allow strange cattle within the fences. It was after all a simple disease to keep out, and if they would only conscientiously act on the lines he had mentioned they would keep their district clean.

#### LAND SETTLEMENT.

The Minister then referred to the question of land settlement. He stated that this was a matter which Government considered as one of the most importance. As they knew, land settlement had received a check in 1906 owing to the disturbing influences in the Colony, which had been renewed at a later date, but which were now far removed, and there was no likelihood of a recurrence. He thought they would be surprised to know of the very great demand indeed that there existed for land. It was being found out that in these hard times there was nothing like going on the land, and that the people who were best off were the people who were settled on farms. All the available Crown lands within easy distance of the railway had been disposed of. There had been a surprising demand for the ten-acre holdings on the Coast which had recently been offered for allotment by Government, and in nearly all cases the lands had had to be ballotted for. With a view to reducing the number of disappointed applicants Government had decided to reduce the area of the Winkel Spruit Experiment Farm by about 200 acres. This area was to be sub-divided and allotted in a similar manner to the other small holdings. The Government fully realised the vital importance to the Colony of having more men on the land, not only for the purpose of paying taxes but for defence purposes. (Applause.) Numerous applications were being received for lands in Zululand, and also for lands on the Berg. Proceeding, the Minister mentioned that Government had recently acquired certain land near the railway which had been sub-divided into fourteen farms. In spite of the fact of these lands being offered very late in the season they had all been snapped up with the exception of three. It was the intention of Government to acquire land within easy distance of the railway; it was not intended to go in for any irrigation settlements, but the lands so acquired would be suitable for dairying, but more especially for mealie-growing, and he hoped to be able to acquire sufficient land to meet the demand. The regulations under which Government were granting land were very easy. An applicant had, in the first instance, to satisfy the Land Board that he had sufficient capital to reasonably occupy the land he was applying for. With the exception of



the survey fee, which was not heavy, there was nothing to pay for the first three years, the first instalment falling due at the end of the third year, and then in twenty equal annual payments free of interest. Further, there was no compulsory building clause, and so long as the farm was beneficially occupied and worked a man could live in a sod hut or tent if he so wished. The Minister pointed out that the land which Government had to purchase could not be granted on quite such easy terms. The first instalment of the purchase price on such lands fell due at the end of the first year from the date of allotment and thereafter in twenty annual instalments with interest at the rate of 5 per cent. In order to make the payments as easy as possible the purchase price and interest were made payable in equal instalments, in order to save the allottee otherwise having to meet such heavy liabilities for the first few years. In order to ensure Government being able to acquire suitable land at reasonable prices and within reasonable distances of the railway, it was intended to introduce an Expropriation Bill at the next Session. As they knew there were numerous cases where lands were not being properly occupied, and which were really nothing less than huge native warrens, and yet those very same lands would provide some fine farms for men who were trying to get land. It was the intention of the Government to put a stop to that state of affairs, and those lands would be among the first to be expropriated. (Loud applause.)

In conclusion, the Minister stated there was another matter he wished to bring to their attention. Owing to the prevalence of East Coast Fever, and the fear of getting it amongst their stock, many farmers were turning to sheep breeding on a larger scale than had hitherto been done. This had been made possible by the discovery of blue-tongue vaccine, which could now be obtained at a penny a dose from the Government Laboratory at Allerton. Sheep-breeding in the neighbouring Colonies was going up by leaps and bounds. It was only a question of a few years when the supply of mutton in South Africa would be in excess of the demand, and in order to find a market the Government were making various trials with a view to establishing a market in London. The Minister pointed out that he was more particularly referring to the shipment of lambs, which was one of the industries that had made New Zealand. In that Colony they were getting as much as 12s. 6d. and 15s. for five month old lambs. The trial shipment that Government had made last year had proved, as they were probably aware, rather a failure owing to the lambs having been weaned and clipped some time prior to the shipment being made, and also owing to other mistakes that had been made. Government had recently sent forward another shipment, and he considered that the quality of the lambs that had been sent forward could not be beaten. He hoped that a second shipment would be made next week. Everything possible was being done to ensure

a successful market in London. He was pleased to be able to tell them that the freights had been reduced to what they had been on the occasion of the last shipment, in addition to which the shipments were going direct to London, instead of being sent to Southampton and then railed to London as had been done last year.

With reference to freights, Mr. Deane stated this reminded him of what the Prime Minister had done on the occasion when he attended the Colonial Premiers' Conference in London. Whilst there he had obtained a reduction of 2s. 6d. a ton on goods consumed in Natal carried by the Conference Lines. He could not say, of course, whether the Natal merchants had given the purchasers the benefit of this concession, but he trusted that the fact of his having made it public would have the desired effect.

The Minister, in thanking them for their very kind reception and for the way they had allowed him to take up their time, stated he would be pleased to answer any questions. (Loud and prolonged applause.)

In replying to Mr. A. C. Kirkman, J.P., the Minister stated he considered it safer to leave the native cattle in locations unbranded.

Mr. Deane, in answer to a question raised by Mr. Hancock with regard to supplying of Colonial meat for the use of gaols, etc., stated that fresh meat only was being taken. The fact that imported meat was referred to in the advertisement calling for tenders was owing to the same form of tender being used as was used when rinderpest was prevalent. In continuation, Mr. Deane pointed out that Natal was now doing a very big trade in fresh meat with the Transvaal and the O.R.C. owing to the severe draughts that were being experienced in those Colonies.

Mr. Hancock then called on the two members for the district, Messrs. Schofield and Walker, to address the meeting, and various matters appearing on the agenda paper of the Ixopo Farmers' Association were discussed.

Mr. Hancock, in closing the public meeting prior to proceeding with the ordinary business of the Association, proposed a hearty vote of thanks to the Minister for having visited them and for the exceedingly interesting address he had given them, which was unanimously carried with enthusiastic applause.

---

Provide plenty of fresh water for the swine. To think that slop is all that is necessary to provide water is a mistake.

## ***Experiment Farms.***

### **CEDARA.**

THE Farm Manager of the Central Experiment Farm reports as follows to the Director of the Division of Agriculture and Forestry:—

In submitting a report on the progress of work done on the agricultural branch of the Farm, the period under review is brought to date from the middle of October, when I assumed duty.

The weather generally has been quite favourable for field work, and very few interruptions interfering with the work have been experienced by thunderstorms. The rainfall registered for the month of November was  $5\frac{3}{4}$  inches; several hot days were felt, the maximum shade temperature recorded being 95 degrees. Your instructions for the conducting of various experiments have been received, and several of them are well in hand.

An area of 16 acres had been ploughed during the early spring, and this has now been planted with Velvet beans, Canadian Wonder beans, and two varieties of inoculated Soy beans. The last-named are part of a recent consignment of seeds from America, and they are all now well up and look promising. There were all planted with the hand "Planet Jr.," a very useful machine for dealing with such, and seeds so small as to be impossible for our larger planters to distribute satisfactorily. In using the hand-planter it is necessary to have the ground marked off in the required width of rows, as a guide for the planter. The following method proved a great success:—The ground having received a good harrowing, was rolled, and in conjunction with this latter operation a marker was fixed behind the roller; it consisted of a plain 2 x 4 plank with iron shoes fixed at the required width between the lines. The straightness of the lines were therefore in accordance with the care taken in driving the team in the roller. The efficient manner in which the work was done reflects credit on the students who were detailed for this particular duty.

Plots of 4 acres each have been planted with bullrush millet, amabele, Boer manna, and rapoko; the latter two varieties were planted broadcast and have come up rather patchy.

A more extensive area comprising several fertiliser experiments has been laid down with bullrush millet, and it is just beginning to show above ground. Surface cultivation in the way of putting on the anti-clog weeder on this section will be seen to as soon as possible. Judging by the demand for seed of this millet, it seems to be favoured by many Natal farmers.

About three acres of mangolds and beet have been planted, five varieties of seeds have been sown, and a continuation of this section will be planted with swedes within the next few days. Previously mangolds have always proved a very delicate crop to get through the early stage successfully.

The early-planted potatoes have been ridged up, the crop is quite free from weeds and blight so far, and to all appearance will not require further cultivation prior to harvesting. A consignment of six varieties of potato seed arrived from England lately, ground has been prepared, and they will be planted at an early date.

Pumpkins, melons, calabashes occupy a good area adjoining the vegetable garden. Instructor Harvey devotes every available spare minute from field duties in attending to the vegetable garden, and also planting in the same enclosure small lots of grass seeds and other varieties.

The *Phalaris commutata* grass seed has been making a vigorous growth. A further supply of this seed has been received from Australia, and provision will be made for the planting of it in a nursery bed.

Plantings of linseed, hemp, carrots, and other two plots of mabele are being kept in view.

The main crop of mealie-planting obviously calls for special attention, and the carrying out of your instructions in fertiliser experiments and distance of planting have received every attention, and at date of writing a good acreage has been got in hand. Having to contend against the cutworm through early planting, the end of November being the recognised planting time in this district, and early frosts on the other hand, a very short planting season is got. I wish to record the willingness and interest that is shown by the students generally in working overtime at present. A series of phosphatic plots, superphosphate, slag, and bone dust has been established in the drained vlei, as also potash experiments with kainit and muriate of potash. Hickory King and Horse Tooth seed has been planted so far to be followed by Boone County and Yellow Dent.

The crop has been planted again on the check row system, which is undoubtedly to be recommended, the weeds being so much easier destroyed in scuffling and cross-scuffling. The anti-clog weeders have been at work for some days, and the seedling weeds have been knocked about and well checked. There is no doubt the anti-clog weeders are valuable implements when put on at the proper time, which is before the weeds begin even to show. It is quite a common thing to see these implements put to work on a growth of weeds several inches high, the result being that it is at once condemned for being incapable of dealing with a growth it was not intended for.

Since the commencement of the planting season daily breakages



have been the order of the day; a great number of implements have been in use since the commencement of the farm, so naturally they are bound to be giving way, while at the same time breakages are unavoidable to a certain extent amongst beginners. The Farm Engineer has consequently been kept busy, and the nature of the work has no doubt been useful and instructive to the students engaged with him during the month.

The students as a whole are giving every satisfaction at their work, and in some cases rapid progress is noticeable; in one or two cases reprimand for sheer carelessness in performing unsatisfactory work has been necessary. Drain-cutting has been a chief feature of the season's work. Drains have been cut, poled with stout gum thinnings from the plantations and covered in. The work and expenditure is fully justified by having a valuable vlei area reclaimed for cultivation.

The working stock are like the implements on the farm, the majority of them have been working on the farm since the start, and taking into consideration the amount of work done by them in transporting the great amount of building material, apart from the ordinary farm work, it is not to be wondered that they are now almost useless. They are being dipped weekly. The sheep are doing well; they have just been clipped. Crossbred lambs from the Merino ewes and woolled Persian rams have been dropped, as also several pure-haired Persian lambs. Merino ewes and woolled Persian ewes are being tupped with woolled Persian ram to lamb down in the beginning of April; likewise haired Persian ewes with a Persian ram recently purchased from Cape Colony. The mob of twenty-four Berkshire pigs are in good condition.

---

#### WEENEN.

---

The Curator of the Weenen Experiment Farm (Mr. E. R. Gessner) reports as follows to the Director of the Division of Agriculture and Forestry:—

Since last reporting to you on the work carried out on this Station my time has been principally devoted to the reaping and harvesting of the various cereal crops and cutting of lucerne experiment plots. The whole of this work has now been completed and results from the various fields and plots tabulated.

Prominent among the most successful trials of grain on this Station is the success attending the growing of some of the rust-resistant wheats imported from Australia last year. The variety known as "Federation" appears to be the most suitable of these for this locality. The "Federation" is a short, hardy, rust-resistant wheat with large, well-filled, beardless ears which are carried on very short, clean straw. This wheat would appear to be well adapted, owing to its stocky nature, to stand up well

## IRRIGATION EXPERIMENTS.

| Variety.             | Date Sown. | Date Harvested. | Area.         | Yield of Grain per acre. | Remarks.               |
|----------------------|------------|-----------------|---------------|--------------------------|------------------------|
|                      |            |                 | acres.        | lbs.                     |                        |
| WHEAT :—             |            |                 |               |                          |                        |
| Menenieu ...         | 28-4-08    | 28-10-08        | 2             | 2,100                    | Bearded (Italian)      |
| Federation ...       | 4-6-08     | 9-11-08         | 1             | 2,014                    | Beardless (Australian) |
| Barley Wheat ...     | 27-4-08    | 8-10-08         | 1             | 1,708                    | „ (Indian)             |
| Marshall's No. 3 ... | 4-6-08     | 9-11-08         | $\frac{1}{2}$ | 888                      | „ (Australian)         |
| Standard Fife ...    | 28-4-08    | 28-11-08        | 2             | 689                      | „ (Canadian)           |
|                      |            |                 |               |                          | Damaged by birds       |
| Yandella King ...    | 4-6-08     | 9-11-08         | 1             | 513                      | Beardless (Australian) |
| Nhill ...            | 4-6-08     | 9-11-08         | $\frac{3}{4}$ | 250                      | „ „                    |
| Dart s Imperial ...  | 16-6-08    | 9-11-08         | $\frac{3}{4}$ | 200                      | „ „                    |
| PEAS :—              |            |                 |               |                          |                        |
| Yorkshire Hero ...   | 23-5-08    | 27-10-08        | 1             | 2,000                    | —                      |

against storms which are sometimes experienced about the ripening period when grown as a winter crop under irrigation as here.

Detailed results of the various experiments are given herewith. Two fields of oats each two acres in extent gave a very good yield of forage, the Algerian yielding three tons to the acre and the Indian two tons of dry forage to the acre. Though the forage was rather too coarse to be considered as first-class for marketing in Natal or Transvaal, still the results of such heavy yields go to prove to the farmer the value of such fodder when grown for home consumption as for feeding of dairy cows, etc., and, when used for such, the fact of being coarse would be of little disadvantage, more especially if turned into ensilage or chaffed up as in other countries.

The ground lately occupied by the various cereal crops is now being ploughed so as to be in readiness for future planting operations.

Tobacco plants will shortly be available for planting out in the field, these having now been well hardened off for this purpose.

Exceptionally fine growth has been made by many of the varieties of fruit trees in the orchard. Some of the varieties of apricots have yielded a good crop of fruit already, and considering that the trees have only been planted three years, this argues well for Weenen as a suitable locality for growing these fruits. Many kinds other than apricots have borne a fair crop this season. The crop of Canadian Wonder beans planted between the rows of fruit trees as mentioned in my last report is now being harvested, and a very good sample of seed is being obtained. In the section of grape vines in the lower part of the orchard I have pinched back excessive growth as necessary to induce better fruiting.

The Cantaloupe melon seeds received from Farm Manager, Winkel Spruit, were planted in September, as per instructions. These germinated fairly well and are now flowering.

A spell of dry weather is now being experienced and all vegetation is showing the effects of the intense heat.

The working oxen are in rather low condition, the number I have (six) being insufficient to cope with the work of this station, and they are consequently overworked. A fair number of visitors inspected this Station during the month and expressed satisfaction with what they saw.

---

---

## ***Crown Forests.***

---

### CONSERVATION REPORT FOR NOVEMBER.

---

THE Chief Forest Officer (Mr. G. H. Davies) reports as follows to the Director of the Division of Agriculture and Forestry, for the month of November:—

Forester Meyer states that East Coast Fever is spreading in his district—Luneberg—and so making any timber-working in the Pongola bushes less likely than ever. The same applies to Ngomi, on the other side of Vryheid, where the disease, according to Forester Foster, still finds victims. Forester Green reports that the fever is now between the Umlalazi and Umhlatuze rivers, and thinks that it will make short work of the large herds owned by the natives near the Ngoya forest.

Trees grow while you sleep, and, though the trade of the woodsman be in abeyance, the foresters' care can do much to ensure an increase in the supply of timber for better times. Foresters Meyer and Fernando both remark upon the vigorous growth of forest seedlings—self-sown—in places damaged by fire in former years. Their stations are as far apart as Pongola Bush and Ingwangwane on the border of Griqualand East, but they both agree in their simultaneous reports as to the value of the Sagewood, in each of these cases, as protector of the seedlings. Forester Purser mentions the spreading of the Silver Wattle down the streams at Bulwer as a pest; but, though one could wish that something more valuable was as enterprising, I am loth to call anything in the shape of a tree a pest. Let farmers take the hint and plant better things along their streams: willows perhaps in the damp edges, but slow-growing yellowwoods, and other indigenous water-conserving trees, on the high well-drained banks.

At Emkazeni, Forester Fernando—whose postal address is P.O.

Dronk Vlei, Ixopo—will have ready for sale in February transplants of indigenous trees—yellowwoods, wild-chestnuts, gardenias, etc.—in boxes of twenty plants each, fit for removal.

Though forest timber has been unsaleable owing to the effects of East Coast Fever, the season has been, according to Forester Gryspeerd, especially favourable for rubber, the latex having been free in flow. It was, however, he reports, grossly neglected by the holders of leases, who were without the excuse of scarcity of labour. On account of bad crops the young natives were forcibly driven out of the kraals, and had to beg for work for their food alone. About Maputa fifty shillings per muid is the price for mealies.

As a result of his own observations during recent patrols, Forester Symons states that eland have been shot last winter on Crown lands adjacent to the Giant's Castle Game Reserve. It has often occurred to me that, in regions so slenderly policed as are the forests of Natal, a system of half-fines to informers might be useful in checking all contraventions of forest and game laws. Forester Mason reports some success in finding steel traps set for buck in his forests. He also notes an increase in the number of blue heron nesting in the Hlatikulu; a bird useful as a devourer of crabs, frogs, and probably snakes. Forester Purser suggests the trial of English pheasants at Bulwer, and I think that if a few were placed in his charge at Marutshwa they would have a good chance of succeeding.

Heavy storms are reported for November. One at Ngoya did damage to the bush, and others, accompanied by hail, occurred at Normandien, Ngomi, Qudeni, and Ixopo.

---

A WHEY butter factory is, according to the *Live Stock Journal*, the latest development of dairying in the United States. The factory itself has been erected at St. Lawrence, Jefferson County, New York, and during the past season has been receiving the separated whey cream from twenty-five other cheese factories. The experience gained is that about 4 lb. of whey butter can be made from every 1,000 lb. of whey, and that this utilisation of the whey solves the problem of the loss of fat in cheese-making. Where the butter has been put on the market its fine flavour has made it very popular, so that it obtains the same price as the finest creamery butter. As a result of selling the separated whey cream the cheese factories have been able to make rather more than a penny more for every 100 lb. of milk; while the separated whey is said to lose none of its value for pig-feeding.



## Gardening Notes for January.

By W. J. BELL, Nurseryman, Florist and Seedsman, Maritzburg.

### KITCHEN GARDEN.

A FURTHER sowing of cauliflower should be made this month if a succession crop is required; also, a second sowing of brocolo. The latter succeeds better than cauliflower in colder districts of the Colony. The main sowings of the various kinds of cabbages should also be made now for the winter crop, such as Drumhead, Oxheart, Enfield Market, Winningstadt, Brussels Sprouts, Scotch Kale and Savoy.

In warm, sheltered parts where tomatoes can be successfully grown as a winter crop, the seed should now be sown. The best all-round variety for market is the Dwarf Champion, which requires little or no support from the vine, being of an upright, sturdy growth, and consequently very little or no staking is necessary. Where only small quantities are required, the Ponderosa is one of the best for winter, but it requires well staking owing to the great weight of the fruit.

Young celery seedlings sown in November should now be pricked out previous to final planting, choosing favourable weather for the operation. This is especially necessary where the seed bed is crowded. About two or three inches between the plants will be sufficient, so that each plant can be lifted with a ball of soil by means of a small fork or pointed stick. If hot, dry weather follows immediately after the operation, shade the seedlings with light litter or straw and water freely till well established.

Plant out leeks from the seed beds in well-manured ground, in deep drills or shallow trenches for the convenience of earthing. The drills may be twelve inches apart and the plants six inches apart in the drills.

Stake and tie up tomatoes as required, and give liquid manure occasionally.

### FLOWER GARDEN.

In the warmer parts of the Colony most of the half hardy and tender varieties of flower seeds may still be sown for autumn flowering, including Aster, Balsam, Calandrina, Celosia, *Centaurea Americana*, *Chrysanthemum tricolor*, Cockscorb, Cosmos, Marigold, Nasturtium, Cactus Sunflower and Zinnia. In the colder districts sow hardy varieties, such as Antirrhinum, Candytuft, Aquilegia, Calendula, Coreopsis, Cornflower, Carnations, Campanula, Dianthus, Larkspur, Lupin, Mignonette, Myella, Pansy, Pentstemon, Petunia and Phlox Drummondii.

For greenhouse or window gardening sow under glass *Primula sinensis*, *Cyclamen persicum* and *Cineraria* for winter and spring flower-

ing. The seed should be sown in shallow earthenware or metal pans. Put in a good layer of drainage of broken brick or cinders, after placing a few crocks over the hole, and then a layer of rough fibrous stuff and fill up to within an inch of the top with a compost of rich loam, leaf mould and sand passed through a fine sieve. Give a good watering and sow the seeds thinly and evenly on the wet surface. Cover thinly with the same compost and place a square of glass over the pan and cover with a sheet of brown paper to exclude the light until the seedlings come through; then admit light gradually, but care must be taken not to allow the direct rays of the sun to fall on them. When water is required, immerse the pan nearly up to the rim in water and remove as soon as the surface appears moist. Avoid surface watering with water can.

Chrysanthemums should now be planted out in rich soil if not already done last month. Mulch the surface round the roots with old manure and water freely in dry weather.

Where orchards of citrus trees are being formed, the trees should be planted out this month. Avoid digging holes and deep planting. Holes in level ground collect and retain the surface drainage, which is fatal to the roots of citrus trees. On a steep hill side they may be necessary, but in this case there is natural drainage.

In addition to the orange, naartje, lemon, lime, etc., all kinds of evergreen fruit trees should be planted this month, including the loquat, guava, avocado pear, mango, Brazilian cherry, rose apple, etc.

Plant evergreen ornamental trees, flowering shrubs, creepers, etc.

---

STRIPPINGS.—The importance of last-drawn milk can never be a matter beneath the notice of the practical dairy farmer or milk-seller. When we realise that the butter-fat contained in "strippings" varies from 7 to 8½ per cent. (whereas first-drawn milk would average only 1 per cent. of fat), the work of drawing out the last drop is therefore one of great interest. When new milk is sold by contract, or otherwise, this milk should be added to the bulk. In large dairy herds of forty to eighty cows a man is kept to "strip" the cows after the other milkers have finished, and in a cheese dairy this "collected strippings" makes a valuable addition to the cheese vat. A well-trained milker will always milk "clean." The teats should be grasped firmly with thumb and fingers of the hands and the milk squeezed out. Milking out a cow by pressing the teats singly through the thumb and forefinger of the hand (in succession) is decidedly bad form. One only sees this mode in dairies where unskilled workers are employed.—*Agricultural Gazette* (London).

## Correspondence.

### WIREWORM IN SHEEP.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—I would deem it a favour if you would insert this letter in your widely-read *Journal*, on a cure for wireworm in sheep, etc., as it may be of some interest to those of your Natal farmers who have stock troubled with worms.

I was continually dosing my flock with various mixtures of bluestone and creosote, etc., but with no good results. In May last I decided to give "Bert Bowker's Wire-Worm Cure" a trial, and found it so effective that I have used over 50lb. of it since then. My sheep are in splendid condition, thanks to the cure. It is in the form of a powder, and can be had from the manufacturer, Mr. M. W. Gradwell, Woodlands, P.O. Carlisle Bridge, District Albany, at 3s. per lb., and by taking a quantity not less than 25lb. it can be had at a 25 per cent. reduction. I have also used it most successfully on ostriches and cattle.—I am, yours, etc.,

F. C. G. PALMER.

Palmerston, near Grahamstown, C.C.,  
3rd December, 1908.

### MACHINERY AT SHOWS.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—I want to make a suggestion to the Royal, Durban, and any other Agricultural Show Committees. Will you therefore give me a small space in your valuable journal?

My experience of the present day agricultural implement of all kinds is not only disappointing, but very costly. You get an up-to-date implement or machine that wins no end of gold and silver medals, money prizes, diplomas, and no end of praise in the Press, and, from the judges and Press point of view, quite right too, because the implement in question is specially made. Exception will be taken to this statement, but, having been through the mill, I know what I am talking about.

First of all one of the best hands in the works is put on to put together a show implement, who selects every part, especially fits each bearing, etc., etc. On arrival in Natal, an expert puts it together, follows it through its trials, and the conditions all round, as a rule, are of the best, and the work done is good. Hence the silver cup. Big business is

done, and a splendid report is given by the Press. Many more implements are bought by farmers who have not seen them before buying, but, Mr. Editor, believe me, the curse loud and deep is said in the open field, heard only by Native, Nature, and Nature's God.

My suggestion is this, that the agricultural societies should give a prize—a fairly decent one—to the implement in the best, or perhaps the worst, condition, after having been in use for two seasons and having been over not less than 300 acres of land. Exhibitors must be *bona fide* farmers not connected in any way with vendors, the implement in question to be shown just as the native or coolie has been using it. Exhibitors to state in writing to the hon. secretary—which should be handed on to the Press—not the hon. secretary—for publication—what he considers are its defects and how the implement or machine could be improved upon. I feel sure if my suggestion were carried out it would be an eye-opener to the maker, and eventually be of great benefit to both producer and consumer, and as almost every farm implement is in use just about the present time, now is the time for the farmer to take notes, if the agricultural societies will only hurry up and advertise the prizes.—Yours, etc.,

B. B. E.

Mid-Illovo.

---

### CAUSTIC SODA AND SULPHUR.

---

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—In your issue for November in an article on sheep dips, the writer quotes some evidence alleged to have been given by Mr. J. E. Fawcett in 1903 before a Departmental Committee appointed by the Board of Agriculture and Fisheries to the effect that wool of the best colour came from South Africa and that this had been the case for the past twenty-five years.

From this remark the writer of the article assumes that expert opinion favours lime and sulphur and caustic soda and sulphur as dips. So far from this being the case, the following letter written by Mr. Fawcett's firm in May, 1899, should remove any such impression from the minds of unprejudiced persons:—

"Broadford Buildings, Bradford, May 30th, 1899.

"A very large quantity of wool from the Cape passes through our hands each year, and we have not the slightest hesitation in saying that it will be deteriorated considerably in value if it is brought into contact with lime and sulphur. In our opinion it will place Cape wool at a disadvantage as compared with the wool from Australia and South America.

"R. FAWCETT & SONS,

"Wool Merchants."



Further up-to-date evidence from Mr. Fawcett is afforded by the following report (published by the *Yorkshire Daily Observer*) of a speech delivered by him on the 24th of June this year at a meeting of the Council of the Bradford Chamber of Commerce:—

“The Lord Mayor (Mr. J. E. Fawcett) said a serious mistake had been made by the Governments of the Transvaal and Orange River Colonies—a mistake that was the more inexplicable in that a Yorkshireman had been responsible for it to a very large extent. He had tried to get into touch with this gentleman several times, but he carefully avoided him on the question. A few years ago a Departmental Committee sat on the question of sheep dips, hearing expert evidence and making a number of experiments, and he thought everybody connected with the wool trade was satisfied absolutely that the committee found perfect dips both for ticks and for scab. One of the things they condemned most strongly was the use of lime and sulphur. He did not think anybody ever suggested caustic soda and sulphur. Caustic soda was the substance used when it was wanted to dissolve wool, and even in the most dilute form it had the effect of making the fibres hard and brittle. It had evidently been recommended without knowledge, and although the Wool Trade Section had taken steps to have the matter put right as soon as possible, there might not be time to prevent harm being done to next year’s clip.”

Fortunately we have before us a copy of the report of the evidence collected by the Departmental Committee in 1903, and from this it seems clear that Mr. Fawcett said nothing which could convey the impression that as a wool expert he favoured lime and sulphur; his firm’s letter four years prior to the sitting of the Commission, and his speech five years later, both effectually dispose of any such possibility.

We enclose herewith an extract from the report of the Departmental Committee giving Mr. Fawcett’s exact words, which cannot by any stretch of imagination be made to bear the construction which has been put upon them.

As a matter of fact, during the period to which Mr. Fawcett refers, Cooper’s dip was the most popular in South Africa, and since that time its sales have increased to such an extent that nowadays sufficient Cooper’s dip is sold annually in South Africa to make 20,000,000 gallons of wash. This surely would not be the case unless farmers were perfectly satisfied that it can be used continuously without injury to the sheep or to the colour and quality of the wool.—Yours, etc.,

WM. COOPER & NEPHEWS.

[The following is Mr. Fawcett’s evidence, as sent by Messrs. Wm. Cooper & Nephews. We may state, with reference to the article on the subject in our last issue, that the version we gave was as we received it

from a correspondent. The evidence as it was in reality taken certainly puts Mr. Fawcett's views in a different light:—

“1619. If you could tell us which wool gives you the greatest satisfaction in your market we might know what was the dip that was being used in connection with the wool; which have you least complaints about?—On the point of colour?”

“1620. Colour and quality?—I think probably the very best colour comes from South Africa.

“1621. Is that good in quality too?—It is similar to the white specimens here and sometimes better.

“1622. That is during recent years?—Yes; it is has gone on for twenty-five years.

“1623. But that, of course, is partly due to the fact that they have finer sheep there?—They have identically the same sheep. It is the same breed as in America, Russia and Australia, and South America.

“1624. You have had least trouble you consider from that?—The best colour comes from South Africa.”]

## ***Agricultural Conditions in November.***

### **THE WEATHER, CROPS, AND LIVE STOCK.**

RAINFALL CONTINUES GOOD.—HAILSTORMS, BUT LITTLE DAMAGE.—  
FORAGE CROP GOOD.—MEALIE PROSPECTS PROMISING.—EGG PRICES  
LOW.—PROGRESS IN DAIRYING.

THERE is very little change apparent in the rainfall conditions of November from those of October, so far as our reports enable us to judge, except perhaps a rather excessive fall for the whole month in a few districts, such as Mid-Illovo, Richmond, Dannhauser, and others. “Sufficient” and “good” are the comments made by most of our correspondents; so that, generally speaking, the prospects of a good season, so far as the weather is concerned, remain as promising as ever. During the November of last year the rainfall was excessive; and a glance at the meteorological returns published at the end of this issue, in respect of the month of November, show that, on the whole, the total rainfall from July to November has not been as much greater than that of the same period of last year as a little earlier in the season was generally anticipated would be the case.

Hailstorms, of course, continue, but the damage done in November does not appear to have been as great as was the case in the previous month. In a few cases young crops suffered, but the most damage was done to fruit. The following particulars of storms which occurred in November—so far as they have been reported to us—may be of interest:—

LADYSMITH.—Several storms. *Duration*: Longest one 20 minutes. *Damage*: To fruit. *Direction*: W. to E. and S. to N.

CAMPERDOWN.—Two storms. *Duration*: Very short. *Damage*: Nil. *Direction*: From West.

LUNEBERG.—One storm, on 27th November. *Duration*: About 30 minutes. *Damage*: To fruit trees and vegetables. *Direction*: S.E. to N.W.

RICHMOND.—One storm. *Duration*: Few minutes. *Damage*: None.

OLIVIER'S HOEK.—One storm. *Duration*: About an hour. *Damage*: Great to wheat, forage, and fruit. *Direction*: W. to S.E.

NORMANDIEN.—One storm. *Duration*: About 20 minutes. *Damage*: Considerable to young crops. *Direction*: S.W. to N.E.

MID-ILLOVO.—Two, on 1st and 16th November. *Duration*: About 15 minutes. *Damage*: Second storm damaged vegetables and early crops of mealies slightly. *Direction*: First, S. to N.; second, from South.

DERING.—One storm on 11th November. *Direction*: N.W. to S.E.

DANNHAUSER.—One storm. *Duration*: Fifteen minutes. *Damage*: Considerable to fruit. *Direction*: S. to N.

INDWEDWE.—One storm, on 16th November. *Damage*: Slight.

HIMEVILLE.—One storm, on 23rd November. *Damage*: Slight.

NKANDHLA.—One storm, on 24th. *Damage*: None.

Our Nel's Rust correspondent reports the occurrence of a thunder-storm on the 16th November, lasting an hour, the chief characteristic of which was a severe whirlwind. The whirlwind travelled a distance of about ten miles, and shifted whinstone boulders and wattle trees which lay in its path, but fortunately no great damage was done, as it only destroyed a few early potatoes and mealies.

As stated in our last notes, the area which is being put under mealies this season is considerably greater than that of last season; and our estimate of an increase of 20 per cent. is confirmed by several correspondents so far as their particular districts are concerned. We hope to be able to publish a preliminary estimate of the probable crop in our next issue, and also to revise that estimate each month until the crop is finally harvested. Planting this year has taken place later than perhaps has ever been the case before, in order to escape the grub. Already some earlier-planted mealies have been attacked, and re-planting has been found necessary. The crop, as far as it is showing above the ground, is looking very well.

The forage crop has been a very good one this year, considering the amount of rain that has fallen. In some districts forage is so cheap that farmers are thinking of going in for wheat instead in future. Wheat is being tried more extensively, but the rain has been responsible for the appearance of rust which has damaged considerable areas.

There is little to add to our notes of last month with reference to the fruit crop. Stone fruits are reported in most districts as promising.

(i.e., in November) a good crop, although the appearance of insects in them has spoilt the crop in a few districts.

Our Creighton correspondent records success which he has had with sheep's burnet; he states that in his district when every other plant is dry, it looks green and fresh, adding that *Paspalum dilatatum* does not make enough growth in that district. Near Greytown some small lots of chicory have been put in as an experiment, and are coming on well; and around Ladysmith ground nuts are; our correspondent there informs us, being planted more freely than hitherto.

The prices of eggs and poultry continued low during November, and those of milk and butter were on the whole fair. The slight improvement in the live stock market which we recorded last month as being noticeable in a few districts has become more pronounced, but not sufficiently so, however, to justify any optimistic prophecies.

We are glad to learn from our Himeville correspondent of the progress which dairying is making in his district. He states that one ton of cream leaves Donnybrook Station from the Himeville district twice weekly; and he adds that there are now two cheese factories at work in the district. With the exception of one cheese factory this trade is entirely new.

#### NOTES FROM NOTTINGHAM ROAD.

Our Nottingham Road correspondent writes as follows:—

Though much too early to make any prediction as to output, the acreage sown and planted in this district is much larger than usual. The district, speaking in a general way, does not supply its own wants as far as mealies are concerned, but this season more than usual has been sown, and if the crops are realised they will probably be equal to local requirements, as live stock forms the principal enterprise of the midlands and feeding in winter is more than ever necessary through the stoppage of the movement of cattle; a long winter or dry late spring would mean a greater consumption of grain for that purpose. From this it will be apparent that this district will not figure as a factor in growing mealies for export in an assured way. Poverty of soil, early frosts, the great expense of fertilizing in order to ensure a crop, all militate against this kind of grain being a staple product in our locality. Potatoes, cabbages (for market), exotic grasses—chiefly rye grass and *Paspalum*—all show an increased acreage, and large quantities of rhubarb have been sent away from Balgowan, Nottingham Road and Rosetta Stations. In fact there is a healthy increase in the general output of all agricultural products which are identified with this district.

So far stock of all kinds remain healthy. Slaughter cattle show an upward tendency, but sheep rather in favour of the buyer. The large sale held by the Nottingham Road Farmers' Association on the 18th of last month totalled nearly £1,700, of which about £1,200 was for horses. Good prices generally were realised in nearly all classes of stock offered.



## The Markets.

### SOUTH AFRICAN AND OVERSEA NOTES AND PRICES.

OWING to the fact that we have gone to press earlier this month than usual on account of the holidays, many of the regular market reports which we receive, including those for Maritzburg and Durban, have not come to hand in time to be included, but we give latest prices available as far as we are able to obtain them.

#### ORANGE RIVER COLONY.

##### HARRISMITH.

The following prices were realised on the 9th December:—

*Live Stock and Animal Produce.*—Ducks, 2s to 2s 4d; turkeys: cocks 7s 6d to 8s 6d, hens 3s 6d to 4s 6d; fowls, 1s 9d to 2s 3d; butter (fresh), 9d to 1s 3d per lb; eggs, 7d to 1s 3d per dozen; mutton, 6d per lb.

*Vegetable Produce.*—Cabbages, 1d to 6d each; cauliflowers, 1d to 6d each; forage, 10s 6d to 12s 6d per 100 bundles; green barley, 1d per bundle; mealies, 13s 6d to 14s 6d per bag; potatoes, 10s to 12s per bag; vegetable marrows, 3d to 6d each.

#### TRANSVAAL.

##### JOHANNESBURG.

The Keeling Agency, Ltd., Box 220, report as follows under date 11th December:—

*Live Stock.*—Market firm for prime stock only; medium and poor very heavily supplied, as sellers are realising before holidays, so should afterwards recover. Good table poultry in demand, but medium has been well supplied. Prices:—Oxen: prime £11 10s to £13 5s (average 35s to 37s per 100 lbs), medium £8 to £9 10s (average 28s to 32s per 100 lbs); lambs, prime, 11s to 13s (average 5½d to 5¾d per lb); sheep, prime, 18s to 21s 6d (average 5d to 5½d per lb); goats (Boer kapater), 16s to 22s (average 4½d to 4¾d). Average is weight dressed Johannesburg. Pigs, 2¾d to 3¾d per lb, live weight; fowls, 1s 9d to 3s 6d; ducks, 2s to 3s 3d; geese, 4s 9d to 5s 9d; turkeys: hens 4s 6d to 7s 6d, cocks 7s to 15s 6d.

*Animal Produce.*—Eggs (by rail), fresh, 8d to 1s per dozen—values firmer but stationary; butter (in pats), 1s 1d to 1s 4d per lb.

*Vegetable Produce.*—Bran, wheaten, 7s 1d to 7s 4d per 103 lbs; wheat, good sound, 20s to 21s 6d per 203 lbs; beans, sound, 19s 6d to 48s

per 203 lbs; forage, per 100 lbs: best 5s to 5s 6d, good 4s 3d to 4s 9d, medium inferior 3s 6d to 4s; peas, 14s 6d to 15s 6d per 203 lbs; chaff, wool bales and compressed, 2s 6d to 3s per 100 lbs; lucerne, 4s 3d to 5s 9d per 100 lbs; grass and hay, veld, 1s to 1s 9d per bale; Kafir corn, per 203 lbs: red mixed 16s 1d to 16s 6d, white 15s 4d to 15s 8d, white mixed 15s 9d to 16s; mealies, per 203 lbs: good white 15s 3d to 15s 5d, good hickory 15s 5d to 15s 7d, yellow 15s 4d to 15s 9d, mixed O.R.C. 14s 9d to 15s; Boer meal, per 203 lbs: good sifted 25s 6d to 28s, unsifted 23s to 24s 6d; monkey nuts, per 100 lbs: shelled 15s 9d to 18s, unshelled 11s to 11s 6d; salt, 5s to 5s 9d per 203 lbs; oats, per 153 lbs: light 11s to 11s 6d, heavy and special 11s 7d to 12s 3d; onions, per 123 lbs: dry Cape 13s to 16s, fresh and local dry 5s to 7s 6d; potatoes, per 153 lbs: choice 15s 6d to 18s, good table 12s to 15s, medium small 7s to 11s 6d; pumpkins, 6d to 1s each; rye, sound O.R.C., 13s 6d to 14s 6d per 203 lbs.

With regard to mealies the Keeling Agency report that wholesale values are practically unchanged on last week; but prices on rails are slightly easier, in sympathy with the recent fall in the wholesale market generally. Prices early in November, however, were higher than was generally expected—indeed, exceeding the price at which contracts were then taken—and as stocks held here were heavy, holders were glad to sell, even Mozambique maize and corn finding their way here. Prices, however, can still be considered better than have ruled for several seasons. Morning market prices have fluctuated daily, according to quantity offering, and any ordinary quantity has brought prices to the level of wholesale value. This is due to the fact that holders here are turning over stocks to the small trader, leaving only the consumer to patronise the market. Prospects are difficult to determine, but holders here have kept prices up.

#### PRETORIA.

Messrs. M. Guinsberg & Co., produce and commission agents, report as follows under date December 15th:—

*Live Stock and Animal Produce.*—Fowls, 1s 9d to 2s 4d; turkeys: cocks 12s 6d to 13s 6d, hens 5s 9d to 7s 6d; ducks, 2s 5d to 2s 10d; pigs, 10s to 49s; butter, 10d to 1s per lb; eggs, per dozen: new laid 1s 9d to 2s 4d, fresh 12½d to 1s 4½d, stale 1s.

*Vegetable Produce.*—Bran, 7s to 7s 6d per 100 lbs; Boer meal, sifted, 25s 6d to 26s per 200 lbs; bedding, 4d per bale; chaff, pressed, 5d per bale; forage, per 100 bundles: best 13s to 18s 3d, second quality 9s 6d; green lucerne and barley, 4d to 1s 3d per dozen bundles; Kafir corn, white, 16s 6d to 18s per 200 lbs; lucerne, pressed, 3s 6d to 4s 6d per bale; mealies, white, 15s to 15s 9d per 200 lbs; oats, seed and feed, 10s 6d per 150 lbs; onions, local, 5s to 8s 6d per 120 lbs; potatoes, per 150 lbs: best 16s 6d to 17s 9d, medium 14s to 15s 3d, inferior 10s; sweet potatoes, 7s; bananas, 2s 6d to 3s per 100.

---

 WOOL, HIDES, ETC.
 

---

Messrs. Reid & Acutt, Durban, have favoured us with weekly reports on the sales at their mart, from which we compile the following notes:—

WOOL.

The London sales, which opened on the 24th November, at once established a general advance in prices above those ruling at the close of the September-October series. Messrs. Reid & Acutt's brokers cabled them as follows on the 25th November:—

"London Wool Sales have opened compared with closing rates of last series: Grease combing, light, 10 per cent. higher; grease combing, heavy,  $12\frac{1}{2}$  per cent. higher; grease clotting, light, 10 per cent. higher; grease clothing, heavy,  $12\frac{1}{2}$  per cent. higher; lambs' wool, light, 10 to 12 months, 10 per cent. higher; ditto, medium, 6 to 8 months, 10 per cent. higher; snow white, super, 5 per cent. higher; snow white, average to good,  $7\frac{1}{2}$  per cent., snow white, inferior and faulty,  $7\frac{1}{2}$  per cent. higher."

Messrs. Reid & Acutt remarks (writing on the 27th November): "We were not prepared to hear that the advance on heavy wools of both combing and clothing sorts had been more than on light conditioned kinds, and we were therefore not surprised to receive a second cablegram this morning, stating that the former had receded  $2\frac{1}{2}$  per cent. on the earlier quotation. This means that practically all wool has registered an advance of 10 per cent. since the beginning of October. It must not however be forgotten that to a considerable extent the more favourable tone in Europe has already been largely reflected here during the past three weeks, and although on our auction this week competition was extremely animated, particularly for lengthy, light conditioned parcels, it was not to be expected that so marked an advance as 10 per cent. should be obtainable here. We consider that prices now are on a distinctly high level and only hope that the present advance will not be followed by any setback. Our friends in London write that the two main factors in the improved outlook in the trade are undoubtedly the close of the American Presidential Election, and the happy termination of the Lancashire cotton strike, two disquieting features which have held trade generally in check for some time past.

"London, 27th November, 1908.—Since last cable message we quote: Grease combing, light, blank; grease combing, heavy,  $2\frac{1}{2}$  per cent. lower; grease clothing, light, blank; grease clothing, heavy,  $2\frac{1}{2}$  per cent. lower; lamb wool, light condition, 10 to 12 months, blank; lamb wool, medium, 6 to 8 months, par; snow white, super,  $2\frac{1}{2}$  per cent. lower; snow white, average to good, 5 per cent. lower; snow white, inferior and faulty,  $2\frac{1}{2}$  per cent. lower."

On the 30th November Messrs. Reid & Acutt received the following cable:—

“London, 30th November, 1908.—Since last cable message we quote: Grease combing, light, par; grease combing, heavy,  $2\frac{1}{2}$  per cent. lower; grease clothing, light, par; grease clothing, heavy,  $2\frac{1}{2}$  per cent. lower; lambs wool, light condition, 10 to 12 months, par; lambs wool, medium condition, 6 to 8 months, par; snow white, super, par; snow white, average to good,  $2\frac{1}{2}$  per cent. higher; snow white, inferior to faulty,  $2\frac{1}{2}$  per cent. higher.”

Writing on the 4th December Messrs. Reid & Acutt stated:—“Private cables go to show that the ‘terminal’ market in Antwerp is weakening. There seems to be a prevalent idea that prices are dangerously high, and that a reaction may set in at any moment. This feeling has undoubtedly been reflected on this market, buyers, in several instances, having had their limits substantially reduced. In order that the position should be clearly ascertained beyond doubt, we cabled to our friends in London immediately after the sale, as follows: ‘What is your opinion of the near future of the market, the local market is weaker with a downward tendency.’ To this we obtained the following reply last evening: ‘London, December 3rd.—Think your information is incorrect, we think the *immediate* future prospect good. The market is firm, in consequence of American buying.’ (N.B.—The italics are ours.) The American demand is mainly for superfine long and cross-bred wools, and does not directly affect the South African supply to any very large extent. But on the other hand, anything that tends towards higher prices for Australian wools would presumably have a reflex influence on South African productions also. At the same time the use of the word ‘immediate’ in relation to market prospects seems to warrant the assumption that a setback in prices is not regarded as altogether unlikely, and that a degree of caution is advisable in basing estimates for any period beyond the close of the present year.”

#### HIDES, HORNS, BARK, ETC.

The latest prices quoted, at the time of going to press, are:—

*Hides* (per lb).—Sun dried, 14 to 20 lbs, average,  $5\frac{3}{4}$ d to  $6\frac{3}{4}$ d; inferior, 4d to 5d; salted,  $4\frac{1}{2}$ d to  $5\frac{1}{2}$ d.

*Sheepskins* (per lb).—Long woolled,  $4\frac{1}{2}$ d to  $5\frac{3}{4}$ d; short woolled, 3d to 4d; coarse and coloured, 2d to 3d; salted heavy,  $3\frac{3}{4}$ d to 4d.

*Goatskins*.—Mixed parcels,  $1\frac{1}{2}$ d to 4d per lb.

*Horns*.—3d to 12d per pair.

*Wattle Bark* (per cwt).—Cut and bagged, good colour and quality, 5s to 7s 3d; cut and bagged, inferior, 2s 6d to 4s 6d; uncut, in bundles, good colour and quality, 4s to 5s 6d; uncut, in bundles, inferior, 1s to 3s.

#### THE OVERSEA MAIZE MARKET.

At the beginning of November there was a better demand generally for mealies. According to *Beerbohm's Corn Trade List*, several La



Plata steamers loading, or about to load, were sold during the first week in November at 26s, whilst Dan-Gal-Fox, one-third old, November shipment, sold at 27s per 492 lbs. For next May-June shipment there were "blank" sellers at a decided discount, viz., about 24s 6d for La Plata, although nothing can yet be known in regard to the next crop. In the meantime the shipments of old corn from La Plata remained moderate; and as neither America nor Roumania had yet begun to ship new maize in quantity, the supplies continued very small and insufficient for the ordinary normal requirements, which, of course, accounts for the maintenance of a high level of price.

A report received by the Agent-General for Natal in London on the 7th November from Messrs. G. Roffey & Son, 41, Seething Lane, London, E.C., stated:—

"South African maize is unchanged on the week, prices being maintained on account of scarcity of same. The White Flat we would quote to-day 28s 6d to 29s, and the Round White and Round Yellow 27s 6d to 28s.

Writing on the 20th November the Agent-General says:—

"The following is Messrs. Campbell & Phillips' last report:—'*Maize.*

←The market has considerably recovered during the past week owing to limited supplies and keener demand. We do not consider that prices will remain high for very much longer. The crop in South Russia is quite the largest on record, 7,000,000 quarters of which will be available for export. The stopping of navigation will limit supplies coming forward freely in the near future, and for the present we think values are fairly safe.' Prices, c.i.f. per 480 lbs: La Plata afloat and loading, 27s 6d; November, 26s 9d; December (mixed American), 26s 3d.

"You will see that South African maize is not quoted.

"There are ready buyers, but there is none offering at the present time. A small lot of Natal White Flat *ex* 'Dover Castle' was bought at 31s on Monday last.

"The Natal maize is exceedingly well liked, and it is to be hoped that next year's crop will be of considerable volume. The Minister of Agriculture's advice to plant every available acre strikes the right note. There is an immense future for South African maize."

With regard to the American crop, the *Corn Trade List* of the 20th November states:—

"The new crop is so far moving slowly to market, although the dry weather has been all in its favour; it is also somewhat surprising that the export trading has not yet assumed much importance beyond numerous parcels for Liverpool at up to 26s 4½d for November shipment, and 26s 1½d for December shipment. For London 26s 6d is asked for January shipment, as compared with 24s 9d at this date last year. America's capacity to export maize in the coming season is quite an un-

known quantity, being largely dependent upon the price obtainable, but it must be remembered that stocks of old corn in hand are reduced to an almost unprecedented extent, so that there is sure to be an active home demand for the first supplies of new corn, and this demand may last a considerable period, thus keeping prices above our level."

It is pointed out by a correspondent of the *List* that, although the world's production of maize this year is apparently 19,000,000 quarters greater than it was last year, it is only about 2 per cent. above the average of the previous five years, whilst the reserve stocks in the exporting countries and the actual stocks in the importing countries have seldom been so small as they now are. He adds that for this reason prices of maize will continue on a high level for a considerable time to come.

The general statistical position of maize on the 20th November was as follows:—

|                                                       |     |     | 1908—qrs.    | 1907—qrs.     | 1906—qrs.    |
|-------------------------------------------------------|-----|-----|--------------|---------------|--------------|
| On passage to U.K.                                    | ..  | ... | 540,000      | 665,000       | 895,000      |
| , , Cont.                                             | ... | ... | 625,000      | 440,000       | 1,225,000    |
| Imports into U.K. for the 46 weeks ending November 14 | ... | ... | 7,223,400    | 11,130,000    | 9,811,700    |
| Visible supply in U.S. ( <i>Bradstreet's</i> )        | ... | ... | 379,000      | 781,900       | 685,300      |
| American crop                                         | ... | ... | 308,000,000  | 302,000,000   | 335,000,000  |
| New York, Spot                                        | ... | ... | 1908.<br>73c | 1907.<br>66½c | 1906<br>53½c |
| Mark Lane, Odessa landed                              | ... | ... | 29 6         | 26/-          | 20/6         |

#### SHIPMENTS OF MAIZE TO EUROPE FROM JANUARY 1ST TO DATE.

|               | 1908.<br>U.K.* | 1908.<br>Cont. | 1907.<br>U.K.* | 1907.<br>Cont. | 1906.<br>U.K.* | 1906.<br>Cont. |
|---------------|----------------|----------------|----------------|----------------|----------------|----------------|
|               | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           | Qrs.           |
| America ...   | 1,251,000      | 1,423,000      | 3,623,000      | 4,034,000      | 3,922,000      | 5,961,000      |
| Argentina ... | 4,220,000      | 3,389,000      | 3,515,000      | 1,915,000      | 5,627,000      | 4,799,000      |
| Russia ...    | 661,000        | 889,000        | 1,483,000      | 2,109,000      | 177,000        | 300,000        |
| Danube, etc.  | 1,338,000      | 2,244,000      | 2,444,000      | 3,872,000      | 454,000        | 1,240,000      |
| Total         | 7,470,000      | 7,945,000      | 11,065,000     | 11,930,000     | 10,180,000     | 12,300,000     |

\* Includes shipments for orders.

#### MISCELLANEOUS COMMODITIES.

Messrs. John Haddon & Co., Salisbury Square, London, E.C., report under date November 27th:—

*Aloes*.—Market for Cape has improved, fair to good hard bright selling at 28s to 29s 6d; part soft at 27s 6d; dull and drossy, 24s 6d to 25s 6d; fair bright, with special terms, at 26s; slightly drossy, 25s to 25s 6d per cwt.

*Beeswax*.—Market very dull, and in sales offerings were mostly bought in. Zanzibar wormy saucers sold at £6 per cwt.

*Chillies*.—Quiet, and rather easier. Six bags Nyassa offered and sold at 43s 6d; 60 bags bright large Japan were bought in at 50s, also 25 bales fair Zanzibar at 37s; 289 bags Mombasa offered and 190 sold, without reserve, at 26s to 30s, according to quality.

*Capsicums*.—Eight bales Madras damages offered and sold, without reserve, at 5s.

*Cinchona Bark*.—The last sales contained 248 bales of African, which sold as follows:—Ordinary to good quill at 4d to 5½d, good broken quill 4¾d to 5d per lb, the average unit being 5d.

*Cocoa*.—On pressure to sell, market has declined fully 2s per cwt. In sales 161 bags West Coast African offered and 30 sold at 46s 6d to 48s 6d per cwt.

*Coffee*.—The Nyassaland, offered and partly sold, met a quiet market, bold sizes selling at 49s 6d to 52s 6d; medium, 46s 6d to 48s 6d; peas, 45s to 57s per cwt.

*Game Hides*.—The last prices realised were as follows:—Sound hartebeests, 5½d; waterbuck, 5d; antelope, 4½d; eland, 3½d; damage, 2½d; sundry skins, 5d; damaged, 2d.

*Hides*.—Sorted, kips and calf skins, are selling well at ¼d per lb advance. Drysalted and brined hides, select quality, in good demand at ¼d dearer, but secondary sorts and thirds are barely steady. Sun-dried hides, best select, heavy and light weights, about ¼d dearer. Common seconds and thirds very slow of sale. Kips and calf skins ¼d up.

*Gum Arabic*.—Egyptian sorts are selling slowly on the spot at 35s to 36s for half-hard. For arrival prices are easier, new crops being quoted 28s to 29s c.f. and i. Senegal has met some inquiry, but few sales have resulted. Bas de Fleuve quoted 20s 9d f.o.b. Bordeaux.

*Indiarubber*.—Medium descriptions have been in good demand, and we have sold fair quantities of Rhodesian and Nyassaland at high prices. The London stock remains very small; shipments coming along will sell well.

*Shell*.—Tortoise.—In the last sales a dull market experienced a decline of 2s to 3s per lb for dark, but good bright mottle sold steadily, both hoof and yellowbelly went in buyers' favour. Zanzibar and Bombay, etc.—About 1,770 lbs shell offered, and 1,700 lbs sold. Small to bold, 19s to 26s. Chicken, 8s to 13s 6d. Pickings, good, heavy, 19s to 22s. Common to fair, 4s to 14s. Hoof, 3s 6d to 14s. Yellowbelly, 2s 6d to 10s 6d.

*Tea*.—Sales this week went off with irregular competition; low, medium, and commons were slow of sale, and barely maintained previous rates, but good to fine were well bid for, and realised full to dearer rates.

*Wood*.—Mahogany.—There was a good attendance and satisfactory competition, African showing a distinct advance. The offerings of this character consisted mostly of small to medium sizes, and generally in bad condition or crooked, realising from 1¾d to 3¾d per ft.

## Meteorological Returns.

*Meteorological Observations taken at Government Stations for Month of November, 1908.*

| STATIONS.         | TEMPERATURE (IN FAHR. DEGS.). |         |                    |                    | RAINFALL (IN INCHES). |              |                             |      |                                     |                                           |
|-------------------|-------------------------------|---------|--------------------|--------------------|-----------------------|--------------|-----------------------------|------|-------------------------------------|-------------------------------------------|
|                   | Means for Month.              |         | Maximum for Month. | Minimum for Month. | Total for Month.      | No. of Days. | Heav's train-fall in 1 day. |      | Total for Year from July 1st, 1908. | Total for same per'd from July 1st, 1907. |
|                   | Maximum                       | Minimum |                    |                    |                       |              | Fall.                       | Day. |                                     |                                           |
| Observatory ..    | 78·5                          | 64·6    | 86·4               | 57·8               | 4·24                  | 22           | 1·00                        | 17th | 16·17                               | 15·31                                     |
| Stanger ..        | 81·9                          | —       | 100                | —                  | 5·55                  | 26           | 1·50                        | 16th | 15·88                               | 18·26                                     |
| Verulam ..        | 83·7                          | 64·0    | 103                | 58                 | 6·44                  | 20           | 1·40                        | 16th | 16·60                               | 16·47                                     |
| Greytown ..       | 80·1                          | 52·9    | 96                 | 43                 | 4·29                  | 16           | 1·25                        | 28th | 15·11                               | 13·42                                     |
| Newcastle ..      | —                             | —       | —                  | —                  | —                     | —            | —                           | —    | —                                   | —                                         |
| Imbizana ..       | 78·4                          | 60·9    | 89                 | 50                 | 3·61                  | 18           | ·55                         | 8th  | 17·52                               | 15·17                                     |
| Estcourt ..       | 84·4                          | 54·9    | 95                 | 45                 | 4·92                  | 9            | 2·00                        | 4th  | 11·10                               | 8·93                                      |
| Bulwer ..         | —                             | —       | —                  | —                  | 7·12                  | 24           | 2·13                        | 26th | 19·08                               | 22·74                                     |
| Ixopo ..          | —                             | —       | —                  | —                  | 4·55                  | 22           | ·75                         | 19th | 15·76                               | —                                         |
| Mid-Illovo ..     | 76·2                          | 56·4    | 98                 | 49                 | 5·80                  | 18           | 2·13                        | 17th | 17·53                               | 17·36                                     |
| Port Shepstone .. | 82·3                          | 56·7    | 87                 | 50                 | 4·03                  | 13           | ·82                         | 15th | 20·93                               | 15·24                                     |
| Umzinto ..        | 81·4                          | 57·2    | 90                 | 54                 | 6·37                  | 15           | 3·18                        | 17th | 18·77                               | 14·60                                     |
| Richmond ..       | 76·1                          | 54·6    | 97                 | 47                 | 6·90                  | 21           | 1·52                        | 16th | 18·91                               | 16·88                                     |
| Maritzburg ..     | 80·5                          | 57·7    | 101                | 49                 | 3·20                  | 21           | ·84                         | 26th | 12·68                               | 13·91                                     |
| Howick ..         | 79·6                          | 55·2    | 94                 | 46                 | 4·31                  | 18           | ·92                         | 17th | 13·68                               | 13·48                                     |
| Ladysmith ..      | —                             | —       | —                  | —                  | 2·05                  | 11           | ·54                         | 27th | —                                   | —                                         |
| Dundee ..         | 86·7                          | 53·9    | 93                 | 49                 | 4·02                  | 11           | 1·89                        | 27th | 12·59                               | 11·75                                     |
| Krantzkloof ..    | 78·0                          | 62·3    | 90                 | 51                 | 4·87                  | 20           | ·99                         | 11th | 16·56                               | —                                         |
| Impendhle ..      | —                             | —       | —                  | —                  | —                     | —            | —                           | —    | —                                   | —                                         |
| New Hanover ..    | 83·0                          | 57·7    | 99                 | 48                 | 4·86                  | 23           | 1·53                        | 6th  | 16·59                               | 16·15                                     |
| Camperdown ..     | 77·7                          | 56·6    | 98                 | 48                 | 2·94                  | 14           | ·73                         | 21st | 10·52                               | 11·19                                     |
| Krantzkop ..      | 84·5                          | 60·4    | 98                 | 43                 | 4·41                  | 25           | 2·67                        | 26th | 11·83                               | —                                         |
| Nqutu ..          | 76·8                          | 52·1    | 85                 | 43                 | 5·12                  | 10           | 2·80                        | 27th | 12·88                               | 10·84                                     |
| Charlestown ..    | 74·4                          | 51·8    | 83                 | 44                 | 5·91                  | 18           | 1·50                        | 6th  | 13·57                               | 12·30                                     |
| Mtunzini ..       | 85·9                          | 56·5    | 95                 | 23                 | 7·05                  | 13           | 1·30                        | 26th | 24·43                               | 24·86                                     |
| Hlabisa ..        | 82·3                          | 60·7    | 92                 | 53                 | 5·48                  | 9            | 1·23                        | 21st | 15·21                               | 15·88                                     |
| Melmoth ..        | 79·9                          | 59·1    | 102                | 51                 | 3·60                  | 21           | 1·16                        | 27th | 11·79                               | 11·27                                     |
| Umbombo ..        | 79·1                          | 60·3    | 93                 | 51                 | 2·47                  | 8            | ·82                         | 21st | 14·85                               | 16·72                                     |
| Point ..          | —                             | —       | —                  | —                  | 5·20                  | 19           | 1·57                        | 16th | 18·73                               | 18·70                                     |
| Lidgettton ..     | 79·2                          | 52·7    | 95                 | 43                 | 4·02                  | 20           | ·73                         | 6th  | 13·47                               | —                                         |
| Vryheid ..        | 84·7                          | 56·1    | 96                 | 47                 | 5·39                  | 8            | 1·38                        | 27th | 16·99                               | 12·69                                     |
| Empangeni ..      | 83·2                          | 61·4    | 100                | 53                 | 3·47                  | 8            | 1·80                        | 27th | 17·82                               | 17·70                                     |

*Meteorological Observations taken at Private Stations for Month of November, 1908.*

| STATIONS.                    | TEMPERATURE (IN FAHR. DEGS.) |                    | RAINFALL (IN INCHES). |              |                              |      |                                     |                                            |
|------------------------------|------------------------------|--------------------|-----------------------|--------------|------------------------------|------|-------------------------------------|--------------------------------------------|
|                              | Maximum for Month.           | Minimum for Month. | Total for Month.      | No. of Days. | Heaviest rain-fall in 1 day. |      | Total for Year from 1st July, 1908. | Total for same period from July 1st, 1907. |
|                              |                              |                    |                       |              | Fall.                        | Day. |                                     |                                            |
| Adamshurst ..                | 99                           | 45                 | 2·96                  | 14           | 0·50                         | 26th | 11·55                               | 12·42                                      |
| Hilton ..                    | 89                           | 45                 | 4·27                  | 22           | 0·66                         | 26th | 13·84                               | —                                          |
| P.M.B., Botanical Gardens .. | —                            | —                  | 3·86                  | 22           | 1·42                         | 26th | 13·32                               | —                                          |
| Ottawa ..                    | —                            | —                  | 6·23                  | 18           | 1·33                         | 17th | 16·58                               | 15·99                                      |
| Mount Edgecombe ..           | —                            | —                  | 6·44                  | 17           | 1·52                         | 17th | 18·21                               | 19·83                                      |
| Equeefa ..                   | 93                           | 57                 | 6·79                  | 19           | 3·15                         | 17th | 18·74                               | 19·17                                      |
| Umzinto, Beneva ..           | —                            | —                  | 6·50                  | 18           | 2·95                         | 10th | 17·37                               | 18·57                                      |
| Harden Heights ..            | —                            | —                  | 3·33                  | 16           | 0·94                         | 5th  | —                                   | —                                          |
| Bransholme ..                | —                            | —                  | 7·45                  | 19           | 1·63                         | 7th  | 21·61                               | 29·88                                      |
| Cedar-a—Hill Station ..      | 95                           | 41                 | 5·16                  | 14           | 1·45                         | 18th | —                                   | —                                          |
| Cedara—Vlei Station ..       | 92                           | 40                 | 5·78                  | 14           | 1·43                         | 18th | —                                   | —                                          |
| Winkel Spruit ..             | 87                           | 50                 | 4·70                  | 15           | 1·65                         | 16th | 15·05                               | 18·61                                      |
| Weenen ..                    | 96                           | 41                 | 4·10                  | 12           | 0·88                         | 30th | —                                   | —                                          |
| Giant's Castle ..            | 73·5                         | 49·4               | 4·03                  | 18           | 0·54                         | 28th | 12·93                               | 9·19                                       |
| Umhlangeni ..                | 91                           | —                  | 3·06                  | 15           | 0·58                         | 16th | —                                   | —                                          |



**Coal and Labour Return.**

Return of Coal raised and Labour employed at the Natal Collieries for the month of November, 1908 :—

| COLLIERY.                | Average Labour Employed. |               |        |                     | Output.<br><br>Tons. Cwt. |            |
|--------------------------|--------------------------|---------------|--------|---------------------|---------------------------|------------|
|                          | Productive Work.         |               |        | Unproductive Work.* |                           | Total.     |
|                          | Above Ground             | Below Ground. | Total. |                     |                           |            |
| Natal Navigation ..      | 382                      | 653           | 1,035  | 18                  | 1,053                     | 25,830 0   |
| Elandslaagte ..          | 340                      | 686           | 1,026  | 33                  | 1,059                     | 18,324 17  |
| Dundee Coal Co. ..       | 295                      | 471           | 766    | 36                  | 802                       | 16,082 4   |
| Glencoe (Natal) ..       | 133                      | 415           | 548    | 171                 | 719                       | 14,281 5   |
| St. George's ..          | 262                      | 458           | 720    | ..                  | 720                       | 11,555 0   |
| Durban Navigation ..     | 150                      | 379           | 529    | 21                  | 550                       | 11,341 0   |
| South African ..         | 111                      | 286           | 397    | 59                  | 456                       | 11 157 15  |
| Natal Cambrian ..        | 189                      | 346           | 535    | ..                  | 535                       | 7,706 0    |
| Talana ..                | 115                      | 312           | 427    | 5                   | 432                       | 6,521 1    |
| Newcastle ..             | 84                       | 377           | 461    | ..                  | 461                       | 5,272 1    |
| Natal Steam Coal Co. ..  | 83                       | 206           | 289    | 17                  | 306                       | 4,753 8    |
| Ramsay ..                | 78                       | 217           | 295    | 16                  | 311                       | 3,063 5    |
| West Lennoxton ..        | 68                       | 134           | 202    | ..                  | 202                       | 2,694 10   |
| Central ..               | 42                       | 71            | 113    | ..                  | 113                       | 1,214 12   |
| Hatting Spruit ..        | 23                       | 31            | 54     | 76                  | 130                       | 916 3      |
| Zululand ..              | 22                       | 23            | 45     | ..                  | 45                        | 489 0      |
| Vryheid ..               | 4                        | 3             | 7      | ..                  | 7                         | 27 0       |
| Hlobane ..               | ..                       | ..            | ..     | 347                 | 347                       | 6 14       |
| Nooitgedacht ..          | 2                        | 3             | 5      | ..                  | 5                         | 4 0        |
| Vaalbank ..              | ..                       | 4             | 4      | 4                   | 8                         | 4 0        |
| Totals ..                | 2,383                    | 5,075         | 7,458  | 803                 | 8,261                     | 141,243 15 |
| Corresponding month, '07 | 2,356                    | 4,854         | 7,210  | 198                 | 7,408                     | 151,922 2  |

|                 | Productive Work. |               |        | Unproductive Work. | Total, Nov., 1908. | Total, Nov., 1907. |
|-----------------|------------------|---------------|--------|--------------------|--------------------|--------------------|
|                 | Above Ground.    | Below Ground. | Total. |                    |                    |                    |
| Europeans .. .. | 176              | 140           | 316    | 74                 | 390                | 350                |
| Natives .. ..   | 777              | 3,227         | 4,004  | 577                | 4,581              | 3,765              |
| Indians .. ..   | 1,430            | 1,708         | 3,138  | 152                | 3,290              | 3,293              |

\* Cost charged to Capital Account.

Mines Department, Maritzburg, 7th December, 1908.

CHAS. J. GRAY,  
Commissioner of Mines.**RETURN OF COAL BUNKERED AND EXPORTED.**

Return of Coal bunkered and exported from the Port of Durban for the month of November, 1908 :—

|                  | Tons.  | Cwt. |
|------------------|--------|------|
| Bunker Coal ..   | 50,624 | 3    |
| Coal Exported .. | 42,241 | 0    |
| Total            | 92,865 | 3    |

Customs House, Port Natal, 1st December, 1908.

GEO. MAYSTON,  
Collector of Customs.**Diamond Drilling.**

SOME of the departmental diamond drilling plants are at present disengaged and available for hire for boring for either minerals or water. Particulars as to terms of hire may be obtained from the undersigned.

CHAS. J. GRAY,  
Commissioner of Mines.

## Return of Farms at Present under Licence for Lungsickness and Scab.

| STOCK INSPECTOR.       | DISTRICT.           | DISEASE.     | OWNER.              | FARM.               |
|------------------------|---------------------|--------------|---------------------|---------------------|
| A. A. Craw ..          | Ladysmith ..        | Scab         | T. Kirkness ..      | Coalfontein         |
| A. B. Roe ..           | Portion of Estcourt | "            | H. J. Hatting ..    | Servitude           |
|                        |                     | "            | J. W. Hodgson ..    | The Ponds           |
|                        |                     | "            | Mrs. M. Hopkins ..  | Driefontein         |
|                        |                     | "            | W. Stone ..         | Schoengezicht       |
|                        |                     | "            | Po rill Bros. ..    | Retreat             |
| A. J. Marshall ..      | Dundee .. ..        | "            | N. T. Hesom ..      | Helena              |
| A. H. Ball ..          | Weenen .. ..        | "            | J. W. Boshoff ..    | Kriebank            |
|                        |                     | "            | I. J. Meyer ..      | Victoria            |
| A. C. Williams ..      | Utrecht .. ..       | "            | Squata ..           | Gum Tree Grove      |
|                        |                     | "            | Uys, P. L. and Sons | Waarhoek            |
|                        |                     | "            | Jock Olipant ..     | Kingsley            |
|                        |                     | "            | P. R. Steenkamp ..  | Holkrantz           |
|                        |                     | "            | J. C. Launhauser .. | Koekraal            |
|                        |                     | "            | C. Tante ..         | Waterhoek           |
| H. Van Rooyen ..       | Babanango ..        | "            | Mrs. H. Van Rooyen  | Weltevreden         |
|                        |                     | "            | Macholo ..          | Driefontein         |
|                        |                     | "            | W. Havemann ..      | Langfontein         |
| J. G. Speirs .. ..     | Impendhle ..        | "            | Pinda, Vete & Sobun | Furth               |
| L. Trenor ... ..       | Alfred .. ..        | Lungsickness | Hitchins Bros. ..   | Thleku              |
|                        |                     | Scab         | Shwana ..           | Location            |
|                        |                     | "            | Yalwayo ..          | "                   |
|                        |                     | Lungsickness | Dumas ..            | Location            |
|                        |                     | "            | M'Yango ..          | Ihluku              |
|                        |                     | "            | Busak ..            | Izingolweni         |
|                        |                     | "            | G. Logan ..         | T and No. 12        |
|                        |                     | "            | J. Mangaan ..       | "                   |
|                        |                     | "            | Guhlano ..          | Location            |
|                        |                     | "            | Pelusa ..           | "                   |
|                        |                     | "            | J. Fynn ..          | "                   |
|                        |                     | "            | M'Nyango ..         | Thluku              |
|                        |                     | "            | Uy.mbi ..           | Location            |
|                        |                     | "            | Mlotshwa ..         | Msingopansi's Kraal |
|                        |                     | "            | Hogg Bros. ..       | St. Mary's          |
|                        |                     | "            | M. Clothier ..      | Slexcel             |
|                        |                     | "            | Tom Fynn ..         | "                   |
|                        |                     | "            | E. M. Etheridge ..  | Selhurst            |
|                        |                     | "            | John Ryan ..        | Norburg             |
|                        |                     | "            | A. Fynn ..          | Paarde Kraal        |
|                        |                     | "            | M. C. Zietman ..    | Ikayolami           |
|                        |                     | "            | H. M. Raw ..        | Orange Grove        |
|                        |                     | "            | Majavus ..          | T. Fynn's Location  |
|                        |                     | "            | J. S. Payn ..       | Phoenix Park        |
|                        |                     | "            | J. J. Oosthuis ..   | The Gorge           |
|                        |                     | "            | J. H. Payn ..       | Burnside            |
|                        |                     | "            | Bycl's Kraal ..     | T. Fynn's Location  |
| A. S. Parkinson ..     | Lion's River ..     | Scab         | H. M. Raw ..        | Elands Drift        |
|                        |                     | "            | A. C. Thomson ..    | Lion's Bush         |
|                        |                     | "            | B. Greene ..        | Mansfield           |
| C. T. Vaughan ..       | Paulpietersburg ..  | "            | W. T. Smith ..      | Loskop              |
|                        |                     | "            | P. Allen ..         | Welverdiend         |
|                        |                     | "            | M. Knight ..        | Vlakfontein         |
|                        |                     | "            | C. Labuschagne ..   | Pivaan              |
|                        |                     | "            | W. F. Marfoss ..    | Blinkwaer           |
|                        |                     | "            | J. B. Rudolph ..    | Fosen Krans         |
| R. Wingfield Stratford | Newcastle ..        | "            | T. Ferreira ..      | Heuley              |
|                        |                     | "            | Tom Lane ..         | Struisvogel Kop     |
|                        |                     | "            | G. van Niekerk ..   | Rattlekloof         |
| C. E. Walker ..        | Portion of Estcourt | Lungsickness | R. P. Botha ..      | Lekkewater          |
| G. Danie ... ..        | Vryheid .. ..       | Scab         | H. Cadle and others | Scott-fontein       |
|                        |                     | "            | Maloi ..            | Zaafontein          |
|                        |                     | "            | P. Ntuli ..         | "                   |
|                        |                     | "            | Malamtula ..        | Goedgedacht         |
|                        |                     | "            | Mjandhla ..         | Onverwacht          |
| J. R. Cooper ..        | Nkandhla & Nqutu    | "            | K. Umsinengo ..     | Mquzini             |
|                        |                     | "            | L. Mloyi ..         | M gabeni            |
|                        |                     | "            | S. Mboyi ..         | Mqazini             |
|                        |                     | "            | B. Bunt'ng ..       | Nquden              |
|                        |                     | "            | S. Molife ..        | Haladu              |
| B. Klusener ..         | Port Shepstone ..   | Lungsickness | B. Scott ..         | Murchison           |
|                        |                     | "            | Mabija ..           | "                   |

RETURN OF FARMS UNDER LICENCE (*Continued*).

| STOCK INSPECTOR.   | DISTRICT.          | DISEASE.     | OWNER.              | FARM.              |
|--------------------|--------------------|--------------|---------------------|--------------------|
| E. Varty ... ..    | Western Umvoti ..  | Lungsickness | H. Hansmeyer ..     | On Rust            |
|                    |                    | Scab         | W. J. Slatter ..    | Holm Lacy          |
|                    |                    |              | T. J. Nel ..        | Mount Ernestina    |
| K. Ripley .. ..    | Emtonjaneni ..     |              | P. H. Van Rooyen .. | Thorn View         |
|                    |                    |              | Ntshoshela ..       | Doornkloof         |
|                    |                    |              | D. C. Uys ..        | Vergelegen         |
|                    |                    |              | Klozonibi ..        | Oakdale            |
|                    |                    |              | Mfulatela ..        | Vlakbult           |
|                    |                    |              | Nhlangana ..        | Mangwazo M.S.      |
|                    |                    |              | Baleni ..           | Mfuli M.S.         |
| A. Hair .. ..      | City and Umgeni .. |              | Janga ..            | Mangwaza M.S.      |
| J. F. van Rensburg | Ngotshe .. ..      |              | Unjabo ..           | Zwaartkop Location |
|                    |                    |              | P. J. van Vure ..   | Driefontein        |
|                    |                    |              | W. R. Vermaak ..    | Frischgewaagd      |
| J. Stewart ..      | Bergville ... ..   | Lungsickness | F. R. Stockie ..    | Rijt Viei          |
|                    |                    | Scab         | J. G. Fannin ..     | Clonmel            |

## MANGE IN HORSES EXISTS AS UNDER

| Owner.                  | Farm.      | District.  |
|-------------------------|------------|------------|
| Pinda, Vete & Sobuon .. | Strathsoon | Impendhle  |
| Natives .. ..           | Olivefonte | Umvoti     |
| Natives .. ..           | Tetworth   | Lion's Riv |
| Natives .. ..           | Spitzkop   | Vryheid    |

### **Brands Allotted to Infected Magisterial Divisions.**

The following is a list of the brands which have been allotted to the several infected Magisterial Divisions:—Durban County, D. 2; Alexandra County, A. 2; Lower Tugela, T. 2; Mapumulo, S. 2; Inanda, B. 2; Umsinga, U. 2; Dundee, X. 2; Vryheid, V. 2; Ngotshe, H. 2; Paulpietersburg, P. 2; Nongoma, G. 2; Mahlabatini, L. 2; Ndwedwe, N. 2; Weenen County, W. 2; Umvoti, F. 2; Hlabisa, K. 2; Eshowe, E. 2; Ladysmith, R. 2; Babanango, O. 2; Ladysmith, East of Line outside infected area, R. 3; Utrecht, Z. 2; Krantzkop, 2 K.; Umvoti Location, 2 F.; Ladysmith, West of main line of Railway, R. 3 on left neck; Pietermaritzburg City, 2 P.; Umlazi Location (Upper Umkomanzi portion), 2 U.; Umgeni Division, west of line, J. 2; Lion's River, east of line, 2 H.

## Pound Notices.

NOTIFICATION is contained in the *Government Gazette* of the sale, unless previously released, of the undermentioned live stock on the dates specified :—

ON THE 30TH DECEMBER.

*Enqabeni*.—(1) White she-goat and kid. (2) Brown she-goat and two kids. (3) White she-goat. (4) Brown he-goat (sick). Impounded at Moguntia on the 22nd June. These animals were transferred to the Pound at Enqabeni on the abolition of the Moguntia Pound, but disappeared. They were afterwards found and returned to the Pound.

ON THE 6TH JANUARY.

*Empangeni*.—Bay mare mule, clipped and shod, mark on left buttock, T.D. over 378, hogged mane, S over B on right hind quarter.

ON THE 13TH JANUARY.

*Ladysmith*.—(1) Reddish-coloured Kafir sheep, ram, no brands. Probable value, 15s. (Impounded on 22nd November by Mr. A. W. Illing.) (2) Black sheep, ram, cut in back of right ear. Probable value, 15s. (Impounded on 22nd November by Mr. A. W. Illing.)

ON THE 20TH JANUARY.

*Ashley* (Ixopo Division).—Black-and-white spotted hog (running on the farm "Wolsley," and reported by Mr. K. A. Mackenzie as being too fat to be driven to the Pound).

*Babanango*.—(1) Two Kafir sheep, no brands or marks. (2) Sixteen mixed coloured sheep, no brands, some have ear-marks.

*Greytown*.—Bay gelding, branded W on off-side; height about 14'3; age 7 years; star on forehead, narrow blaze up the nose, off-side hind hoof white, off-side front hoof full of cracks. Probable value, £10. Impounded on November 14th by Mr. J. Short, Holme Lacey.

*Hope Farm* (Newcastle Division).—(1) Dark brown mare, branded F P on near hind quarter, J S on off-side, long mane and tail. (2) Dark brown mare, branded J S over J V on off-side, with filly foal, no ear marks. (3) Bay gelding, black points, white saddle marks on back, long mane and tail, no brands or ear marks. (Above impounded by Mgwebo, Native, Bank Farm). (4) Dark brown gelding, branded D on near shoulder, and looks like 9 on off shoulder, long mane and tail. (Impounded by J. M. Egner, Muller's Pass).

*Horwick*.—Bay colt, no marks or brand, between three and four years old, gelding, about 14 hands. (Running on farm "Rawthorpe," and reported by Mr. E. W. Shaw on the 25th November as too wild to be driven to the Pound). (2) Brown mule, grey under belly and head; branded Q (inverted) on right hip, P on right side of neck, 3 letters blurred on left side of neck, clipped on left hip and branded P — over broad arrow; shod on front feet.

*Loteni* (Impendhle Division).—Blue ewe-goat, tip of left ear cut off, hole (torn out) in tip of right ear.

*Utrecht*.—(1) Bay horse, 3 years old, branded S on off shoulder, height 14 hands. (2) Black mare, blaze face, 3 years old, no marks or brands, height about 14'2.

*Weenen*.—Black nanny-goat, half grown, short horns. (Impounded from Ingwamama, on Mr. Geo. Smith's farm).

---

In feeding the colt bear in mind that it is bone and muscle that it needs, and the nitrogenous foods are what should be fed, such as oats and bran.



## Government Laboratory.

### SCALE OF CHARGES FOR ANALYSES, VACCINES, ETC.

The following is the scale of charges fixed for analyses, etc., at the Government Laboratory, Al'erton, Pietermaritzburg :—

|                                                                                                                                   | £        | s. | d.     |
|-----------------------------------------------------------------------------------------------------------------------------------|----------|----|--------|
| Drinking-water Analysis :                                                                                                         |          |    |        |
| Chemical ... ..                                                                                                                   | 2        | 2  | 0      |
| Bacteriological ... ..                                                                                                            | 5        | 5  | 0      |
| Milk, Analysis ... ..                                                                                                             | 0        | 10 | 6      |
| Sputum, Bacterioscopic examination ... ..                                                                                         | 0        | 5  | 0      |
| Biological test for Tubercle ... ..                                                                                               | 1        | 1  | 0      |
| Throat-swabs for Diphtheria (prepared swabs obtainable on application) :                                                          |          |    |        |
| Bacteriological Report ... ..                                                                                                     | 0        | 2  | 6      |
| Urine, ordinary clinical examination ... ..                                                                                       | 0        | 5  | 0      |
| Quantitative estimation of glucose ... ..                                                                                         | 0        | 10 | 6      |
| Biological test for Tubercle ... ..                                                                                               | 1        | 1  | 0      |
| Fæces, for Ankylostomiasis ... ..                                                                                                 | 0        | 2  | 6      |
| Blood (collecting outfit obtainable on application) agglutination test for Typhoid (Widal), Paratyphoid, Malta Fever, etc. ... .. | 0        | 5  | 0      |
| Tumours and Morbid Tissue :                                                                                                       |          |    |        |
| Microscopic examination ... ..                                                                                                    | 10s. 6d. | to | 2 2 0  |
| Post Mortem examinations ... ..                                                                                                   | 10s. 6d. | to | 5 5 0  |
| Toxicological examinations ... ..                                                                                                 | 10s. 6d. | to | 21 0 0 |
| X-ray examinations, blood-counts, etc., by special arrangement.                                                                   |          |    |        |

The following sera, vaccines, etc., are issued at the prices indicated :—

|                                                               | s. | d. |
|---------------------------------------------------------------|----|----|
| Anthrax Inoculation, per double dose of two inoculations ...  | 0  | 6  |
| Anti-Diphtheritic Serum, per dose ... ..                      | 5  | 0  |
| Anti-Streptococcic Serum, per dose ... ..                     | 2  | 0  |
| Anti-Tetanic Serum, per dose ... ..                           | 2  | 0  |
| Mallein, per dose... ..                                       | 0  | 4  |
| Tuberculin, per dose ... ..                                   | 0  | 4  |
| Anti-Venene (for snake bites), per dose ... ..                | 5  | 0  |
| Blue-Tongue Vaccine, per 25 doses ... ..                      | 2  | 0  |
| Blue-Tongue Curative Serum, per 50 cub. c. ... ..             | 2  | 6  |
| Quarter Evil Vaccine (in five and ten dose packets), per dose | 0  | 3  |
| Q. E. V., Double Inoculation, per dose ... ..                 | 0  | 6  |

Appliances for inoculations, syringes, etc., are also supplied from the Laboratory.

## Government Cold Stores and Abattoirs.

### PIETERMARITZBURG.

It is notified for the information of Farmers and others that Government is prepared to receive Cattle at the Government Abattoir, Pietermaritzburg, for Slaughter and Storage, if necessary, upon the following Scale of Rates and Charges, or such of them as may meet the requirements of Cattle owners. It must, however, be understood that owners will be required to make their own arrangements for the sale of the meat of cattle sent in for slaughter, the Government being unable to offer facilities or to accept responsibilities in this regard.

Cattle may also be received for slaughter at the Government Abattoir, Point, Durban, at the charges noted below. As the Government is unable to offer facilities for cold storage at Durban, or for the sale of the meat of cattle sent for slaughter, it must be understood that owners will be required to make their own arrangements in these respects, and the Government is unable to accept responsibility in either regard at Durban.

|                                                                           | Calves<br>up to<br>One<br>Year<br>old. | Cattle<br>over<br>One<br>Year<br>old. | For minimum<br>number of 250<br>head per month. |                             | For maximum<br>number of 500<br>head per month. |                             |
|---------------------------------------------------------------------------|----------------------------------------|---------------------------------------|-------------------------------------------------|-----------------------------|-------------------------------------------------|-----------------------------|
|                                                                           |                                        |                                       | Under<br>300 lbs.<br>weight.                    | Over<br>300 lbs.<br>weight. | Under<br>300 lbs.<br>weight.                    | Over<br>300 lbs.<br>weight. |
|                                                                           | s. d.                                  | s. d.                                 | s. d.                                           | s. d.                       | s. d.                                           | s. d.                       |
| 1. Receiving ... .. per head                                              | 0 3                                    | 0 6                                   | 0 6                                             | 0 6                         | 0 3                                             | 0 3                         |
| 2. Killing and Cleaning ... .. "                                          | 2 3                                    | 3 6                                   | 2 9                                             | 3 3                         | 2 6                                             | 3 0                         |
| 3. Labour ... .. "                                                        | 0 3                                    | 0 6                                   | 0 3                                             | 0 6                         | 0 3                                             | 0 6                         |
| 4. Disinfectants ... .. "                                                 | 0 1                                    | 0 1                                   | 0 1                                             | 0 1                         | 0 1                                             | 0 1                         |
| 5. Bagging (4 Quarters) ... .. per body                                   | 1 9                                    | 3 0                                   | 2 6                                             | 2 9                         | 2 3                                             | 2 6                         |
| 6. Cleaning of Tripes ... .. each                                         | 0 6                                    | 0 6                                   | 0 6                                             | 0 6                         | 0 6                                             | 0 6                         |
| 7. Chilling of Beef, up to 72 hours<br>or portion thereof ... .. per body | 1 0                                    | 2 9                                   | 2 0                                             | 2 6                         | 1 9                                             | 2 6                         |
| 8. Chilling of Offal, up to 72 hours<br>or portion thereof ... .. per set | 1 0                                    | 1 0                                   | 1 0                                             | 1 0                         | 1 0                                             | 1 0                         |
| Chilling and Freezing Beef—                                               |                                        |                                       |                                                 |                             |                                                 |                             |
| 9. 1st week or portion thereof per body                                   | 2 0                                    | 4 6                                   | 3 9                                             | 4 0                         | 3 6                                             | 3 9                         |
| 10. 2nd " " " " "                                                         | 1 0                                    | 4 0                                   | 3 3                                             | 3 6                         | 3 3                                             | 3 3                         |
| 11. 3rd and remaining weeks or<br>portions thereof ... .. "               | 0 8                                    | 3 0                                   | 3 0                                             | 3 0                         | 3 0                                             | 3 0                         |
| Chilling and Freezing Offal—                                              |                                        |                                       |                                                 |                             |                                                 |                             |
| 12. 1st week or portion thereof per set                                   | 1 4                                    | 1 6                                   | 1 4                                             | 1 4                         | 1 4                                             | 1 4                         |
| 13. 2nd " " " " "                                                         | 1 0                                    | 1 3                                   | 1 0                                             | 1 0                         | 1 0                                             | 1 0                         |
| 14. 3rd and remaining weeks or<br>portions thereof ... .. "               | 0 9                                    | 1 0                                   | 0 9                                             | 0 9                         | 0 9                                             | 0 9                         |

A charge of 1s. per head is made in respect of any Sale of Cattle on leg at the Government Abattoir and a similar charge is made in respect of Bodies of Beef or portions thereof.

For further particulars, apply to the Manager, Government Cold Stores.

Department of Agriculture, Maritzburg,  
21st December, 1908.

## East Coast Fever Advisory Committees.

(NOTE.—Owing to sparse European population, the following Magisterial Divisions have no Advisory Boards: Ubombo, Mapumulo, Ingwavuma, Mahlaba-tini, Ndzwandwe, Nkandhla and Hlabisa.)

ALEXANDRA.—Chairman: W Thompson, Umzinto. Members: H Bazley, R C Archibald, A Blamey, H Reynolds, G J Crookes, R Parkin, J A Curle.

ALFRED.—Chairman: Magistrate. Members: A G Prentice, Rev. S Aitcheson, J E Brown, F H Boddy, H M Raw, H Rethman, H C Hitchens, H J R Hatchwell, W P Bouserie.

BERGVILLE.—Chairman: T E Zuncel, J.P., Bergville. Members: P H Van der Riet, J G Fannin, H Jackson, C Halferty, F Zuncel, Mbulali—Consulting member for natives.

BULWER.—Chairman: Magistrate. Members: R Comrie, Wm Colville, B Gordon, H Cole, P Garson, P McKenzie, G Malcolm, H C Gold, R Justice, E Stafford, W Little.

CAMPERDOWN.—Chairman: A N Kirkman, Cato Ridge. Members: J F

Erfmann, P J Kingham, W B Turner, C J A Scheepers, W Mercer, L G Wingfield

Stratford, J W Harvey, B B Evans, J W V Montgomery, B R Buchanan, W L

Stead. SUB-DIVISIONAL BOARDS.—No. 1. *East of Railway Line from "Spitzkop" to*

*Railway Line.*—Chairman: J F Erfmann, Cato Ridge. Members: P J Kingham,

H Dinklemann, F L Meyer, J H Meyer, H A Meyer. No. 2. *East of Railway Line*

*from West of Government Fence.*—Chairman: C J A Scheepers, Thorneybush.

Members: W B Turner, W Mills, J F Scheepers, H Nadauld, G S Phipson. No. 3.

*West of Railway Line from Koning Krantz to Killairney and along Umlaas River.*

—Chairman: A N Kirkman, Clairmont. Members: W Mercer, W Brown, R God-

frey, W S Meyer, E W Meyer. No. 4. *West of Railway Line, rest of Division be-*

*tween Main Line, Umlaas River Boundary of No 3.*—Chairman: W L Stead, Thorn-

ville Junction. Members: F H Meyer, J R Schwegmann, W E Schwegmann, W

S Crouch, B R Buchanan (Hon. Sec., Manderston). No. 5. *West of Main Line,*

*Beaumont, East of Main Mid-Illovo River from Westley's Drift to Umgwaranta*

*River.*—Chairman: J W Harvey, Camperdown. Members: L G Wingfield Strat-

ford, R Lyne, O A Hutton, E H Hayes, F E Groom. No. 6. *Mid-Illovo West of*

*Line, rest of Division South of Umlaas River.*—Chairman: B P Evans. Members:

J W V Montgomery, J H McCullough, J Ballam, J James, H S Power.

DUNDEE.—Chairman: F Turton, Glencoe Junction. Members: J Campbell,

J J Grove, H Wiltshire, G M De Waal, Aug Jansen, A J Potgieter, A Cronje, A

Schuid, H Greenhough. SUB-DIVISIONAL BOARDS.—*Glencoe Sub-area.*—Members:

F Turton, H Greenhough, W H Miller, F Schroeder, V Marshall, J Lausen, J J

De Jager, Rev Father Rauch (Native interests). *Hatting Spruit Sub-area.*—Mem-

bers: J J Grove, H A J Davil, A E Notman, J Campbell, Rev J Dewar (Native

interests). *East of Helpmakaar Road.*—Members: A M Cronji, D C Pieters, P

Meyer, J A Naude, A Jansen. *West of Helpmakaar Road.*—Members: A J G

Meyer, A P Lund, D C Uys, A J Van Tonder, Jun, A J Potgieter. Members of

Joint Committee for Area West of Helpmakaar: A J Potgieter, A P Lund. Mem-

bers of Joint Committee for Area East of Helpmakaar: A Jansen, A M Cronji.

*Area between Main Vryheid Railway Lines.*—Members, W Craig, H Wiltshire, C

M Meyer, Sen, A Spies, Jun, C M De Waal.

DURBAN BOROUGH.—Chairman: E L Acutt, Durban. Members: H R

Bousfield, R Benningfield, G Swales, J Haynes, — Arthur.

EMTONJANENI.—Chairman: Magistrate. Members: F W Smith, H J James,

F W White, A W Symmonds, R J Ortlepp, D C Uys, L J Van Rooyen.

ESHOWE.—Chairman: A Boast, Magistrate. Members: A Moore, G H

Hulett, C F Adams, T Parkins, A T Wantink, F J Dickens, H H Thole.

ESTCOURT.—Ward 2. *East of Main Line.*—Chairman: A Stuart. Members:

Magistrate, J Ralfe, J W Haw, J G Hatting, A Peniston, A B Haviland, G M

Rudolph. Ward No. 3. (Boundaries): The Bergville Magisterial Division, Tugela

to junction of the two Tugelas; The Winterton Settlement fence to Vaai Plaats

fence and Ovington and Sibhamie's Location fence, and from there to Government

Game Reserve).—Chairman: H J De Waal, Glenisla. Members: R Gray, M Sanderson, R J Land, A Spearman, H L Bacon. *Ward No. 4* (Estcourt West of Railway Line; follow Bushman's River as far as Mr. Kerr's farm, then Nalaara's Location fence as far as Game Reserve).—Chairman: R H Ralfe. Members: F C Schiever, J Rencken, W Couch, P Male, T L Fyvie, J Hatting, A W J Hatting. *Ward No. 5* (Boundaries: Remainder of District West of Line).—Chairman: H Blaker, Estcourt. Members: W Comins, E B Griffin, H A Woodruffe, Col. Crompton, J Russell, A C Robinson, Jun, A E Downing, A D Shaw, J W Bentley.

GREYTOWN.—Chairman: Paul Hansmeyer, Greytown. Members: D Havemann, A Newmarch, J A Nel, W T Slatter, A T Handley, H S Botha. *Central Board*.—Chairman: P Hansmeyer, Greytown. Members: J A Nel, A Newmarch, W J S Newmarch, T K Taylor, S W Cadle, R J Van Rooyen, E J Van Rooyen, J G Nel.

INANDA.—Chairman: C R Bishop, J.P., Umgeni. Members: R Harrison, W Sykes, Jun, E Dore, W Campbell, R Armstrong.

KLIP RIVER.—*No. 1* (A line from Elands Laagte along the Matawaans and Jononos Kop to the Berg; North line, Dundee boundary: all West of Main Line).—Members: C Mitchell Innes, R M Gray, L Meyer, J C Henderson, C Allen. *No. 2* (O.R.C. line and boundary No. 1). Members: D Bester, A J Marais, W Allison, J Bester, — Brink. *No. 3* (From Klip River Bridge to Sand Spruit, and up Sand Spruit to its source in the Berg).—Members: H A Potgieter, A A Wetherell, B Nel, F Van Rooyen, H Portsmouth. *No. 4* (Rest of Division South and East of Sand Spruit and West of Main Line).—Members: W Leathern, H Illing, J H Newton, E Robinson, G W Willis. *No. 6* (Whole of Division East of Main Line).—Chairman: J G de Waal. Members: R A Smith, H Nicholson, P Cronje, J Farquhar.

KRANTZKOP.—Chairman: L L D Proksch, Krantzkop. Members: L M J Van Rooyen, L M J Van Rooyen, F E Van Rooyen, J H Van Rooyen, J P Zietsman, A Johnson.

IXOPO.—Chairman: Magistrate. Members: Thos Allen, Geo Martin, E Marriott, A Stone, G A Cooper, J.P., Wm Gray, D Campbell, F L Thring, J.P.

LION'S RIVER.—*No. 1* (Southern portion of West of Main Line).—Chairman: U K McKenzie, Lidgetton. Members: R J Spiers, F North, A McLean, J Morphew. *No. 2* (Northern portion West of Main Line).—Chairman: G Ross, Nottingham Road. Members: J Clouston, K Soutar, D Connel, D Smythe. *No. 3* (Southern portion East of Main Line).—J W Dicks, "Rosebank," Howick. Members: W M Henderson, — Buchanan, Jos Raw, H J McKenzie. *No. 4* (Northern portion East of Main Line).—Chairman: H Burgmann. Members: W Methley, G Hutchinson, J J Morton, B Taylor. (The whole of the members of the Sub-Divisional Boards constitute the Central Board with the Magistrate, Lion's River, as Chairman.)

IMPENDHLE.—Chairman: T Fleming, Boston. Members: J Martens, P J Lourens, T Carter, C W Brooke, J W McLean, H Boike, C C Lewis, W S Alborough, W Harrington, C W Roberts, D Tootell. *Sub-Committee appointed for Northern portion of Division* (added to Lion's River Division).—Chairman: P J Lourens, Insinga, via Nottingham Road. Members: H Boek, C N Brooke, T Carter, J Martens, J W McLean. *Sub-Committee for Southern portion of Impendhle*.—Chairman: T Fleming, Boston. Members: C C Lewis, W S Alborough, W Harrington, C W Roberts, D Tootell.

LOWER TUGELA.—Members: W H B Addison, A E Jackson, H E Essery, A S L Hulett, J Brown, W O Robbins.

LOWER UMZIMKULU.—Chairman: Col. J F Rethman, North Shepstone. Members: Col. J R Royston, D C Aitken, J.P., C H Mitchell, J.P., G P Beachcroft, Claude Manning, H Albers, N Harper, J S Clarke, A Borchard, T Stapleton, Col. Bru-de-Wold.

MTUNZINI.—Chairman: Magistrate. Members: F Green, G M J Gielink, G Getkate, W Saville, A H Konigkramer.

NEWCASTLE.—*No 1* (to be known as Charlestown-Ingogo District from main line of Railway where it strikes the Southern line of the farm Cloutant West, thence along Western boundary of said farm, thence along S. W. boundary of Tipperary West, thence Southern boundaries of Hamstead, Dumferline and Roodeport, thence along the Northern side of the Botha's Pass main road to where it joins the O.R.C. Boundary, thence along the boundary of the Colony, thence along



the Charlestown Fence to where it joins the Railway line near Mount Prospect Gate, thence along the Railway line to Cloutant West).—Chairman: J Vos, Charlestown I.O. Members: W J Adendorff, A J Johnstone, A Paine, A H Trouw, Angus Wood. No. 2 (Newcastle district Southern boundary of No. 1 along Railway line from Cloutant West, including portion of Town Lands, Newcastle, which by agreement with Government is considered to be West of line, thence along Railway line where it strikes the Southern boundary of the farm Kopjeallen, thence along Southern boundaries of Kopjeallen, The Gardens, and Lincoln to the Ingagane River, thence up the Ingagane up to the farm Falixtowe, along Southern boundaries of Falixtown, Bilwerton, Brooklyn, Stonehenge, Tathamscamp, Hanover, Ellensdale, Endsel, Bejvisel, Stelazies Kop, Mount Blanc, to O.R.C. border fence, thence along O.R.C. boundary joining Southern boundary of No. 1 at Botha's Pass).—Chairman: S W Reynolds. Members: F A R Johnstone, W Moller, J.P., L H S Jones, C Earl, F Meyer, J J Muller, — Van Breda, J Macdonald, J C Adendorff, E Sanders. No. 3. *Dannhauser District* (Bounded by Southern District No. 2 from the Railway line at Kopjeallen to the Berg, thence along O.R.C. border, the boundary between Newcastle and Klip River Divisions, thence along the Railway line to the farm Kopjeallen).—Chairman: W L Oldacre, Dannhauser. Members: Geo Friend, B Harrington, L J Muller, J Ecksteen, E Hodson, W Watson, Ted Twyman, G Langley, Don Urquhart. No. 4 (East of Railway Line, along the boundary between Newcastle and Dundee Divisions from the Railway Line near Dannhauser to the Buffalo River, along the Buffalo River to the junction of the Ingagane, thence along the Ingagane to its junction with the Ineander, thence along the Ineander to the fence of the Newcastle Town Lands, known as the Eastern boundary of the Railway Line, thence along the Eastern side of the Railway Line to the Magisterial Division boundary near Dannhauser).—Chairman: T K Boshoff, Dannhauser. Members: J H Potgieter, H Miller, J H van der Westerhuizen, J J Kemp, W Dicks, C Uys. No. 5 (the strip of land lying between the Railway Line and the Buffalo River from the Ingagane and Ineander streams, which form the North-Western boundary of No. 4 district).—Chairman: E W. Noyce, Boscobello P.O.; members, Geo Matthews, T K Panzera. *Central Board*.—Chairman: S W Reynolds, Newcastle. Members: F A R Johnstone, J Vos, Sen, Angus Wood, W Oldacre, W Watson, E W Noyce, F N Panzera, T R Boshoff, J H van der Westhuizen.

NEW HANOVER.—Central Board. Chairman: E Newmarch. Members: W W Bentley, T C Wolhuter, F Reiche, H Schmidt, E Lindhorst, W L'Estrange, A F McKenzie, W Meyer. *New Hanover Sub-Committee*.—Chairman: E Newmarch. Members: Jno Moe, W W Bentley, W Ortmann, T C Wolhuter, O J Muirhead. *Dalton Sub-Committee*.—Chairman: W L'Estrange. Members: A F McKenzie, R W Smith, G Reddinger, H Rosenbrock, J H Gordon, W Meyer. *Schroeders Sub-Committee*.—Chairman: F Reiche. Members: H Schmidt, E Lindhorst, G Moe, P Rodehorst, H T Rohrs, F Goeden, A Meyer, W Fortmann.

NQUTU.—Chairman: A Barklie, Utrecht. Members: H Wilkins, R L Flindt, W A Westbrook, J W F Hall, Dr. Knight.

PAULPIETERSBURG.—Chairman: N J Els, Viljoen's Rust. Members: J B Rudolph, G J Combrink, A Schutte, A Bester, P H van Rooyen.

PIETERMARITZBURG.—Chairman: B Swete Kelly, Pietermaritzburg. Members: W S Crart, C A Fawcett, W E Goodwin, E G McAllister, E E Hodgson.

RICHMOND.—Chairman: Magistrate. Members: E E Johnson, J Mapstone, G D Alexander, C P Lewis, C Nicholson, W Comrie, John Marwick, W P Payn, A H Cockburn. *Sub-Division No. 2*.—Chairman: G D Alexander, Nel's Rust. *Sub-Division No. 5*.—Chairman: W Oldfield, Fox Hill.

RIET VLEI DISTRICT.—Chairman: D E Muir, Deepdale. Members: J M Van Rooyen, R J Van Rooyen, E J Van Rooyen, H F Varty, Herman Hohls, J Hooper.

SEVEN OAKS DISTRICT.—Chairman: W J S Newmarch, Harden Heights. Members: H M Balding, J.P., J Crow, J T Martens, H Mayne, S W Cadle.

UMGENI.—Chairman: A Robinson, Pietermaritzburg. Members: J P Symons, F F Schroem, P H Campbell, J F Potterill, A Wood, W Oldfield, C L Lund, R W Comins, R H Pepworth, J F M Keytel, F J Smith, W Lyth, B Crompton, J Blackburn, J Christianson, A J Tyler, A E Bristowe.

UMLAZI.—Chairman: C Henwood, Durban. Members: W Pearcer, W Gillett, H Freese, L Jackson, P W Mackenzie.

UMSINGA.—*No. 1 District* (All farms lying West of the Umsinga-Helpmakaar main road).—Chairman: E C Nuss. Members: W W Strydom, J.P., J H Nuss. *No. 2 District*—(All farmers East of the Umsinga-Helpmakaar main road—excepting the farms Sutherland, Gordon, Memorial Mission and Pomeroy Town Lands, and Location lying North of the Mazabeko and West of the Buffalo River).—Chairman: W H Wholberg, P.O. Elandskraal. Members: H W Dedekind, J Dedekind. *No. 3 District*—(The remaining portion of the area lying in the Umsinga Division).—Chairman: A Muller. Members: M J Matheson, H Muller. The three Committees to constitute the joint Committee.

VRYHEID.—Chairman: A von Levetzow, Vryheid. Members: P Labuschagne, B E A Rabe, G M van der Westhuizen, J Kruger, J F Potgieter, L M N Nel.

WEENEN.—Chairman: C G Jackson, Weenen. Members: C Harding, J.P., P J van Rooyen, J.P., K Rottcher, S B Buys, J J Vermaak, L C Kinsman, J W A Pole, C F Vermaak, P R Buys, J C's son.

## **Employment Bureau.**

THE Department of Agriculture has received applications from the undermentioned, who are prepared to become assistants or apprentices on farms. The Department will be glad to hear from farmers willing to take young men as assistants, and to place them in correspondence with the various applicants. Communications should be addressed to the office of this *Journal*.

No. 110.—Englishman, 39 years of age, gardener by profession, with knowledge of farming, desires employment on a farm. Appears to be a steady and reliable man.

No. 111.—Married man, 36, no children, desires managership of farm. Spent five years with Capt. Hayes, and is well acquainted with the management of horses, including racing horses. States he has sound veterinary knowledge and understands dairy, poultry, pig, and stock farming generally. South African experience, four years Cape Colony and one year Impendhle Division, Natal. Is prepared to work for month or two for board and lodging to prove capabilities, provided sound opening at end of that time.

No. 113.—Age 27, desires to obtain a start on a farm in Natal. Came to South Africa six months ago; attended the preliminary classes at the Glasgow and West of Scotland Agricultural College, and has also obtained a certificate for Theoretical Agricultural Chemistry. Is steady, and would be willing to work without any salary in order to obtain a practical knowledge of farming.

No. 115.—Englishman, 26 years of age, steady and an abstainer, with a knowledge of cattle and horses, wishes employment on a farm in Natal (English preferred) as a handy man, with a view to furthering his knowledge of farming in this country. Is willing to accept food and clothing in a good home, for services, for a few months with the prospect of a small wage after the first three months.

No. 116.—Cape man, age 32 years; married, no children. Has been used to working with horses and mules all his life. Has good papers from his previous employers, and was in the employ of the Public Works Department for over five years. Is willing to do anything in his power, but cannot read nor write.

No. 117.—Englishman, 25, of good education, desires appointment as overseer on a plantation in Natal, and would pay a reasonable premium and give services free for a few months if necessary. Has had commercial, engineering, surveying and mining experience.

Farmers requiring good, steady farm hands would do well to communicate with Ensign Anderson, of the Salvation Army Shelter, Maritzburg, who constantly has good men at the Shelter who would be glad of employment at reasonable rates. Ensign Anderson pledges himself not to recommend for employment any but those he is satisfied will give satisfaction to their employers. He will be pleased to enter into correspondence with any farmer who may address him on the subject.

## **Executives of Farmers' Associations.**

**ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION.**—President: Wm Thompson. Hon Vice-Presidents: A Blamey, E W Hawksworth, Thos Kirkman, H Basley, J L Knight, R.M. Hon Secretary and Treasurer: Geo Lamb. Hon. Auditor: W B Brunner. Committee: W Arnott, H G Arbutnot, R C Archibald, R G Archibald, J Bazley, A Behrmann, W Cooke, G J Crookes, R Cruickshank, H D Hawksworth, H E Hawksworth, A F W Hawksworth, R C Hawksworth, J Landers, D McAndrew, F Nelson, C A Preston, Dr. Rouillard, W A Gilbert, Fred Blamey, Rev B M Ford, S C Hawksworth, J C Landers, S F Crookes, J J Crookes, R A Lindsay, J A Curle, F B Preston, R Parkin, H Reynolds, J B Stewart, C Taylor, H H P Waller, J Ross, Rev W C Wilcox, Dr W P Tritton.

**ALFRED COUNTY FARMERS' ASSOCIATION.**—President: A G Prentice, J.P. Vice-Presidents: C Knox, J.P., L T Trenor, and C A Holwell. Hon. Secretary and Treasurer: H C Hitchins. Committee: C M Etheridge, R Fann, J.P., V Hitchins, S Aitchison, J.P., W B Rethman, Dr Case, J.P., H Rethman, R G Mack, J Hogg.

**BOSTON FARMERS' ASSOCIATION.**—President: Thos. Fleming, J.P. Vice-President: T. W. Rudland. Hon. Secretary: W. J. Fly, J.P. Hon. Treasurer: H. A. Phipson.

**CAMPERDOWN AGRICULTURAL SOCIETY.**—President: John Moon, J.P. Vice-Presidents: J Gavin and John W Harvey, J.P. Hon Secretary: W E Allsopp.

**CAMPERDOWN AND DISTRICT FARMERS' ASSOCIATION.**—President: John Moon, J.P. Vice-President: F N Meyer. Hon Secretary: J Baker. Committee: H Baker, J Gavin, J W Harvey, J.P., W B Turner, H H Hutton, C Baker, H E Meyer.

**CHARLESTOWN FARMERS' ASSOCIATION.**—President: Johannes Vos. Vice-President: — Adendorff. Secretary: W. J. Curnow. Treasurer: J. O. Thomas. Committee: H. O. Eksteen, J. P. Vos, J. C. Uys, W. G. Thomas, D. Doyr, F. A. R. Johnstone, M.L.A., G. E. Lane, S. R. Higgins, B. F. Johnstone, A. J. Johnstone, J. J. Eksteen, R. H. Greaves, Peter Thompson, G. McArthur, and V. B. van Rooyen.

**DRONK VLEI FARMERS' ASSOCIATION.**—President: Capt Perceval. Vice-President: Alban Hodson. Hon Secretary and Treasurer: Edward Marriott.

**DUNDEE AGRICULTURAL SOCIETY.**—President: T. P. Smith. Vice-Presidents: The Minister of Agriculture, the Mayor of Dundee, Messrs. A. L. Jansen, F. Thurton, and W. Craig. Hon. Secretary and Treasurer: J. McKenzie. Committee: A. W. Smallie, W. J. H. Muller, G. M. de Waal, B. J. Humann, R. Retallack, H. Ryley, H. J. Head, C. T. Vermaak, H. P. Walker, J. Dyson, H. Wiltshire, J. Campbell, H. Greenhough, D. W. H. Tandy.

**DURBAN AND COAST SOCIETY OF AGRICULTURE AND INDUSTRY.**—President: E. W. Evans. Vice-Presidents: Sir B. W. Greenacre, A. M. Campbell, Hon. Marshall Campbell, M.L.C., W. Adams, Frank Stevens, C.M.G., M. S. Evans, M.L.A., P. D. Simmons, W. R. Poynton, Hon. C. G. Smith, M.L.C., G. S. Armstrong, M.L.A., H. R. Bousfield, W. G. Brown, C. Henwood, J. Livingston, John Nicol., C.M.G., H. H. Puntan, R. H. Wisely, V. Seymour, H. Sparks. Secretary: John Morley. Committee: J. Ellis Brown, J. Burman, C. A. L. Bull, D. Doyle, Samuel Deane, James Henderson, W. Konigkramer, W. D. Kimber, W. J. Mirrlees, W. Milne, J. Swales, W. J. Thompson, C. Wilson, Wilfred Payne, Wallis Short, S. T. Amos, J. McBride, F. M. Hillier, W. A. Stocken, and W. A. Bath. Treasurer: Edwin Greenacre. Auditor: W. Murray Smith.

**DURBAN COUNTY FARMERS' ASSOCIATION.**—Patron: J H Colenbrander. President: J McIntosh. Vice-Presidents: H Westermeyer, R R McDonald. Committee: F R W Behmer, G Compton, H Freese, W Freese, W Gillitt, H W Königkræmer, H W Nichols, F Schäfermann. Hon Secretary and Treasurer: Frank J Volek.

**EMPANGENI AND DISTRICT SUGAR PLANTERS' CLUB.**—President: P Stott. Secretary and Treasurer: F Piccione, P.O. Empangeni. Executive: C B Addison, G Higgs, W Paul, P Addison, C Sturroch.

**ESHOWE DISTRICT FARMERS' ASSOCIATION.**—President: J R Pennefather. Vice-President: C F Adams. Secretary: T Parkins. Treasurer: W T Brockwell.



GOURTON FARMERS' ASSOCIATION.—President: W C Stockil, Esq., J.P. Vice-President: M Sandison, Esq. Hon Secretary and Treasurer: Frederick B Burnard, Esq.

HATTING SPRUIT FARMERS' ASSOCIATION.—President: A W Smallie. Vice-President: Thos Brookes. Hon Secretary and Treasurer: R J Hearn. Committee: G Queddon, N Glutz, Wm Craig, W R Quedsted, W T Heslop, Thos Dewar, A E Norman, D P Campbell, J J Grove, H J Hearn, D W H Tandy, J B Pendar, J Campbell, J Barbour.

HIMEVILLE AGRICULTURAL SOCIETY.—President: Henry C Gold, Dartford, Underberg. Vice-Presidents: F E Peto, G H Royston, J B Nicholson. Hon Secretary and Treasurer: G Palframan, Watermead, Underberg. Executive Committee: G Malcolm, W S Johnston, P McKenzie, F E Peto, J S Gordon. Yard Steward: D T Malcolm. Auditors: T C Dearlove and F E Peto.

HOWICK FARMERS' ASSOCIATION. — Chairman: Thos Morton. Vice-Chairman: M A Sutton. Hon Secretary and Treasurer: A Clark.

INGOGO FARMERS' ASSOCIATION.—President: E. W. Noyce. Vice-Presidents: G. A. Finstone and D. A. Drummond. Hon Secretary and Treasurer: C. Drummond.

IXOPO AGRICULTURAL SOCIETY.—President: F L Thring, J.P. Vice-Presidents: Col W Arnott, B.M.R., W K Anderson, J.P., C E Hancock, J.P. Committee: John Anderson, Thos Allen, J C Auld, H D Archibald, F S Benningfield, S Boyd, T L Clarence, F E Foxon, R.M., Wm Foster, Jas T Foster, C C Foster, Geo E Francis, L Gray, A M Greer, J.P., J R Greer, Wm Gold, H A Hill, C F Harris, A E Keith, R Kennedy, Geo Martin, W Oakes, L J Phipps, T F Remfry, J W Robinson, Jas Schofield, M.L.A., D C Smail, A Stone, W R Way, A H Walker, M.L.A., P D Webb. Hon Secretary: G C Way, Hon Assistant Secretary: A G Harris. Hon Treasurer: T Arnott.

IXOPO FARMERS' ASSOCIATION.—President: C. E. Hancock, J.P. Vice-Presidents: T. F. Remfry and R. Vause. Hon. Secretary and Treasurer: Geo. E. Francis, Morningview, Ixopo. Delegates to Farmers' Union: Col. Arnott and T. F. Remfry, with W. D. Campbell as reserve. Committee: John Anderson, W. Oakes, D. Campbell, G. C. Way, James Foster, A. Keith, G. Martin, F. Z. Thring, A. C. Kirkman.

KLIP RIVER AGRICULTURAL SOCIETY.—President: Daniel Bester, Vice-Presidents: Herman Illing, J G Bester, Wm A Illing. Secretary and Treasurer: Edward V Bambrick (Box 90, Ladysmith). Executive Committee: A Brink, J Farquhar, C.M.G., M.L.A., W C Hattingh, J G Hyde, Trev Hyde, A I Horsley, W Freer, L A Leonard, H Nicholson, H C Thornhill, Herman Illing, D Munger, P de Waal, J H Newton, D Sparks, J.I., J T Francis, A W (Gus) Illing, G Pinkney, W Cochrane, George L Coventry, and *ex officio* officers.

KRANTZKOP FARMERS' ASSOCIATION.—President: Capt M Landsberg. Vice-President: P R Vermaak. Hon Secretary and Treasurer: Dr L L Proksch. Committee: C J van Rooyen (Albany), C J van Rooyen (Wonderfontein), Philip Nel, J A G Mare, L M G van Rooyen, J C Martens.

LION'S RIVER DIVISION AGRICULTURAL SOCIETY.—President: Graham Hutchinson. Vice-President: H Nisbet. Executive Committee: H Nisbet, M A Sutton, A J Holmes, J Humphries, Jno Pole, and W A Lawton. Auditor: W J R Harvard. Hon Secretary and Treasurer: Arthur F Dicks, P.O. Box 1, Howick.

LITTLE TUGELA FARMERS' ASSOCIATION.—President: F van de Waal. Vice-President: F G King. Secretary and Treasurer: H L Frances. Auditor: A D Buchanan. Committee: P R Summersgill, F W Holmes, J P Wepenaar, J J Harding, Max Cameron.

LOTENI FARMERS' ASSOCIATION.—President: J A Tod. Vice-President: T Carter. Hon Secretary: A Kennedy Stone.

LOWER TUGELA DIVISION ASSOCIATION.—President: W R Hindson. Vice-President: A E Foss. Hon Secretary and Treasurer: H Curtis Smith (Stanger). Committee: A S L Hulett, F Addison, G Stewart, T G Colenbrander.

LOWER UMZIMKULU AGRICULTURAL ASSOCIATION.—President: D C Aiken, J.P. Vice-Presidents: H Aibers and C H Mitchell, J.P. Hon Secretary and Treasurer: W J Plows. Committee: C Manning, J W Aiken, W G Camp, T F Godwin, J Hutton, H Norden and A Borchard. Hon Secretary, Show Committee: J W Aiken. Show Committee: A E Collison, A Borchard, F Knoop, A Ringo, H F Voigts, J Hutton, C Manning, A J Lugg and H Albers. Hon Auditor: J W Aiken.



MID-ILLOVO FARMERS' CLUB.—Chairman: L G Wingfield-Stratford, J.P. Vice-Chairman: B B Evans. Hon Secretary: J W V Montgomery. Assistant Hon. Secretary: A L Wingfield. Hon Treasurer: Jos McCullough.

MOOI RIVER FARMERS' ASSOCIATION.—President: R Garland. Vice-President: C B Lloyd. Hon Treasurer: H A Rohde. Collector: Capt W H Stevenson. Auditor: Claude Seott. Hon Secretary: H B Hall.

MUDEN AGRICULTURAL ASSOCIATION.—President: Thos Thresh. Vice-Presidents: Wm Lilje, E A Grantham. Secretary and Treasurer, C A Selling. Committee: Otto Rottcher, Karl Lilje, Karl Rotter, Herman Schafer, Fritz Torlage, T Braithwaite, Ernest Rottcher, C H Tilbrook, Rev H Rottcher (Hon Life Member).

NEWCASTLE.—President: F A R Johnstone, J.P. Vice-President: C Earl, J.P., Mayor of Newcastle; Angus Wood, J.P., Ingogo; O Schwikkard, C.M.G., Newcastle. Secretary: Wm Beardall. Treasurer: Ed Nicols. Executive Committee: L H S Jones, E Phillips, H C Caldecott, C Watson, G Langley, W A Lang, W J P Adendorff, J E de Wet, O Davis, S W Reynolds, B Pettigrew, G W Thomas, G H Bishop, H R Muir, M C Adendorff, W Napier, P Van Breda, Chriss Botha, G Templar.

NEW HANOVER AGRICULTURAL ASSOCIATION.—President: G C Mackenzie. Vice-Presidents: J C Watt, J.P., and R H Oellermann. Life Member: C A S Yonge, M.L.A. Secretary and Treasurer: W D Stewart, New Hanover. Auditor: J H F Hohls. Committee: W N Angus, E Bentley, W W Bentley, Edward Boast, E E Comins, G R Comins, C Crookes, jun, H Dinkelmann, J Duval, W Fortmann, Dr C H Herbert, J Hillermann, J H F Hohls, H Jacobson, H A Iight, G C Mackenzie, A F Mackenzie, T M Mackenzie, J Muirhead, J.P., Oswald Muirhead, G Moe, J.P., J Moe, C Oellermann, F Oellermann, C J Oellermann, W Ortmann, J C Otto, E Peckham, J.P., J A Potterill, S Peckham, C M Scott, Rev J Scott, Wm Schroeder, J.P., Owen Solomon, J H Smith, Riby Smith, F Thole, H Vorwerk, H F Westbrook, W H Westbrook, C Westbrook, T Wolhuter.

NOODSBERG ROAD AGRICULTURAL ASSOCIATION.—President: Fritz Reiche, J.P. Vice-Presidents: H Mummbrauer, P Rodehorst, W Dralle, W Wortmann. Committee: W Bartels, F Bosse, H Brammer, A J Bruyns, H Bruyns, Carl Dralle, H Gebers, W Gevers, J H Holley, jun, W C Holley, C Hillermann, L Koeb, H Kohler, F E Kuhn, M Maister, H Mereis, A Meyer, H Meyer-Estorf, H W Meyer, K A Meyer, H Misselhorn, W Misselhorn, K Peters, I Pfothenauer, G Rabe, G Reiche, Joh Reiche, W Reneken, H Rosenbrock, H Schmidt, K Schmidt, Rev Jas Scott, K Seele, F J Smith, J Thies, W Witthoft, P Worthmann, A Worthmann, F Worthmann, H Worthmann. Secretary: Paul Vietzen, P.O., Singletree. Hon Treasurer: E Beurlen.

NOTTINGHAM ROAD FARMERS' ASSOCIATION.—President: B. Greene Vice-President: Geo Ross. Secretary and Treasurer: C J King, Nottingham Road. Hon Auditor: H Singleton.

PIETERMARITZBURGSCH BOEREN VEREENIGING.—President: D P Boshoff. Secretary: E G Jansen, 313, Loop Street, Maritzburg.

POLEIA AGRICULTURAL AND HORTICULTURAL SOCIETY.—President: J Isbister. Vice-Presidents: W H Allwright, J F Alexander, and H Brown. Hon. Secretary and Treasurer: J Anderson Speak. Auditor: A Brown. Executive Committee: J Isbister, W H Allwright, J F Alexander, H Brown, H J Gazzard, G W Foster, J Anderson Speak. Hall Committee: W H Aliwright, F Crossley, A Brown, with the trustees—J F Alexander, H E Mingey, and Geo Forder.

RICHMOND AGRICULTURAL SOCIETY.—President: John Marwick. Vice-Presidents: W P Payn, A W Cooper, J W McKenzie and Chas Nicholson. Hon Treasurer: R Nicholson. Hon Secretary: Tom McCrystal. Committee: J W T Marwick, Evan Harries, R A McKenzie, F O Howes, H M Moyes, W Comrie, Thos Marwick, J C Nicholson, J W Flett, and E J B Hosking.

RICHMOND ROAD FARMERS' ASSOCIATION.—President: Thos Stead, J.P. Vice-President: W Mapstone. Secretary and Treasurer: W L Stead, New Leeds. P.O. Committee: D Malcolm, J Mapstone, W P Payne, J James, J Sinclair, W S Crouch, H B Boyd, W Middleton, W Oldfield, T E Horwood.

ROYAL AGRICULTURAL SOCIETY OF NATAL.—President: Sir G M Sutton, K.C.M.G. Vice-Presidents: W S Crart, Jas King, D C Dick, G J Macfarlane, C.M.G., O Hosking, with His Worship the Mayor, *ex officio*. Secretaries, Treasurers and Collectors: Duff, Eadie & Co, 12, Timber Street, Pietermaritzburg. Yard Superintendent: H J Stirton. General Committee: T J Allison, W H

Buchanan, F G Burchell, W H Cobley, P H Campbell, R Comins, W P Gough, E S Goodwill, K H Hathorn, K.C., T W J Hall, J Hall, L Line, Col Sir D Mackenzie, K.C.M.G., Jas Morton, Sir T K Murray, Jno Moon, W J O'Brien, P Otto, R H Pepworth, J F Potterill, A Robinson, Rev J Scott, P D Simmons, H Solomon, W L Stead, H J Stirton, Dr Oddin Taylor, F W Jameson, S J Mason. Executive Committee: President, Vice-Presidents, and W J O'Brien, W H Cobley, K H Hathorn, K.C., and Col E M Greene. Members appointed by Corporation: Councilors Ireland, Sanders and Hathorn.

SLANG RIVER (UTRECHT) FARMERS' ASSOCIATION.—Chairman: P J Kemp. Executive Committee: J J Uys, J Z Moolman, T J Botha, P J Viljoen, P J Kemp. Hon Secretary and Treasurer, Thys Uys, Utrecht P.O.

UMSINGA-BIGGARSBERG FARMERS' ASSOCIATION.—President: E C Nuss. Vice-President and Acting Secretary: Geo S Saunders, Helpmakaar.

UMVOTI AGRICULTURAL SOCIETY.—President: Major T Menne. Vice-Presidents: Theunis J Nel, M.L.A., W J Slatter, W L'Estrange. Executive Committee: Tol Nel, A Newmarch, W Lilje, O Rotteher, S C Van Rooyen, W Newmarch, E J Van Rooyen, O Norton, I M Nel, J Browning. Managers of Show Yard: J M Handley and N Hunter. Hon Auditor: W K Ente. Secretary and Treasurer: W H Gibbs.

UMVOTI FARMERS' ASSOCIATION.—President: P R Botha (J's son). Vice-President: J M Handley. Secretary and Treasurer: G E Cadle (Box 6, Greytown). Auditor: J M Nel. Committee: W J Slatter, J G Nel, H F Torlage, R J Landsberg, A Newmarch, P H van Rooyen, A F Handley.

UPPER BIGGARSBERG FARMERS' ASSOCIATION.—President: W L Oldacre. Vice-President: G Langley. Hon Secretary: W F B Sutherland.

UTRECHT AGRICULTURAL SOCIETY.—Chairman: L Viljoen. Vice-Chairman: B H Breytenbach. Members: I Bierman, M M Knight, J H Klopper, B C Hattingh, T Botha, M Gregory, P L Uys, H P Breytenbach. Secretary: G J Shawe.

UTRECHT BOEREN VEREENIGING.—President: D J A van der Spuy. Secretary: G J Shawe, Utrecht.

VICTORIA COUNTY AGRICULTURAL SOCIETY.—President: Lieut-Col F Addison. Vice-Presidents: Sir Liege Hulett, Kt, M.L.A., W J Thompson, Esq, J.P., J Polkinghorne, Esq, M.L.A. Committee: Messrs W H B Addison, G S Armstrong, M.L.A., C Bishop, J.P., D Brown, sen, J.P., W Campbell, T C Colenbrander, A E Foss, J.P., A S L Hulett, J.P., J B Hulett, C Jackson, G Nicholson, J.P., T Polkinghorne, J W Perkins, J.P., E Saunders, J.P., G Stewart, and J H Stansell. Hon Secretary and Treasurer: H Curtis Smith (Stanger).

VRYHEID (WARD I.) AGRICULTURAL SOCIETY.—President: E Dalton. Vice-President: J F Potgieter. Secretary: F Kolbe. Assistant Secretary: H Lombaard. Committee: Secretary, Assistant Secretary, and A von Levetzow, T Ries, P Grobler, F Molman, A Steenkamp.

WEENEN AGRICULTURAL SOCIETY.—President: Allan Stuart. Vice-Presidents: R Garland, R H Ralfe, F I de Waal. Hon Treasurer: F C Schiever. Hon Secretary: E Cautherley. Auditor: S Wolff. Executive Committee: Hon H D Winter, M.L.A., J W Moor, M.L.A., D W Mackay, T H Hindle and L L'Estrange. Manager of Show Yard: S Vaughan. Assistant: A Clouston.

WEENEN COUNTY HORTICULTURAL SOCIETY: Committee of Management: The President and Treasurer of the Weenen Agricultural Society and C J Offord, G W Linfoot, T J Nunn, Dr Brewitt, S Vaughan. Hon Secretary: F Cautherley.

ZULULAND FARMERS' ASSOCIATION.—President: F W White. Vice-President: C E Symonds. Secretary: R H McAlister. Committee: Hon D C Uij, A W Symonds, H T James, R J Ortlepp, J N R Dixon.

ZULULAND COAST FARMERS' ASSOCIATION.—President: G H Hulett. Vice-President: C Hill. Hon Secretary and Treasurer: F Brammage, Ginginhlovu.

*(The Editor will be obliged if the Hon. Secretaries will supply him with lists of the Executives of their Associations.)*

Scale No. 1 is applicable to samples handed in by Merchants and Dealers, and where trade interests are involved.



Scale No. 2 is applicable to samples forwarded by *bona fide* Farmers and Gardeners.

Samples will be accepted at the discretion of the Department, and must be properly selected and labelled.

The Department reserves the right to publish the results of any analysis performed by it; and, where such is deemed of sufficient public interest, it will remain at the discretion of the Department to remit any charges hereunder.

E. R. SAWER,  
Director, Experiment Stations,  
Acting Conservator of Forests.

November 22nd, 1907.

### TENDERS FOR MONO-RAIL SYSTEM.

Tenders are invited for the purchase of 6,400 feet of mono-rails, with points, etc., and four sugar cane trucks, from the Central Experiment Farm.

Tenders should be addressed to the Director of Experiment Stations, Cedara, and should be submitted with the least possible delay.

### MAIZE SEED.

Growers who may have for sale selected seed of the following types of maize are invited to communicate as early as possible with the Director of Experiment Stations, Cedara:—Horse Tooth, Hickory King, Boone County, Golden King and Yellow Dent.

### CENTRAL EXPERIMENT FARM, CEDARA.

In order to minimise interference with the general course of work on the Central Experiment Farm, Cedara, it has been found necessary to set apart one day of the week, namely, Friday, as a visitors' day.

Arrangements will accordingly be made on that day for receiving visitors and showing them round the Farm. A trap will be at Cedara Station to meet the up 9.50 a.m. train; and if intending visitors from up-country will give notice to the guard at Howick Station, on their way down, a trap will be sent to meet the train which passes through Cedara at 11.2 a.m. Visitors travelling by other trains will also be met if they will previously make arrangements by writing.

On other than the visitors' day, visitors may be received by appointment, but special attention cannot be guaranteed in regard to their being shown round.

As the catering involves such a strain upon the resources of the School of Agriculture, it has been decided to limit the number of delegates from any one Association to 25 per cent. of its membership. At least 14 days' clear notice must be given by Associations, so that there may be time to make all necessary arrangements.

In view of the fact that Parliament has refused to grant the necessary funds, the cost of railway tickets can no longer be borne by the Department of Agriculture.

All communications in connection with proposed visits to the Experiment Farm should be addressed to the Director of Experiment Stations, Cedara.

24th September, 1907.

W. A. DEANE, Minister of Agriculture.

## **Land and Agricultural Loan Fund.**

The Land and Agricultural Loan Fund has now been established, and the Board are prepared to receive applications for advances on security of first mortgage on fixed property. Applications must be made upon special printed forms, which can be obtained, together with full particulars as to the conditions under which advances are made, from the office of the fund, Post Office Buildings, Pietermaritzburg.

All correspondence should be addressed to the Secretary, Land and Agricultural Loan Fund, P.O. Box 357, Pietermaritzburg.



## ***Publications Issued by the Department of Agriculture.***

THE following publications, issued by the Department of Agriculture, are still in print, and copies may be obtained free (except those with price attached) upon application to the office of the *Agricultural Journal*, Department of Agriculture, Pietermaritzburg. The figures in square brackets (e.g. [1904]) are the years in which the various publications were issued.

### **No. BULLETINS.**

- 2.—“Manures on the Natal Market, 1902,” by Alex. Pardy, F.C.S., Analyst. [1902.]
- 2a.—“Treatment of Milk and Cream, from the Producer to the Consumer,” by E. O. Challis, Dairy Expert. [1904.]
- 4.—“Manures on the Natal Market, 1903,” by Alex. Pardy, F.C.S., Analyst. [1903.]
- 6.—“Manures on the Natal Market, 1904,” by Alex. Pardy, F.C.S., Analyst. [1904.]
- 7.—“Tree-planting in Natal,” by T. R. Sim, F.L.S., Conservator of Forests. [1905.]  
(Price 2s. 6d., post free.)
- 8.—“Agricultural Co-operation,” by E. T. Mullens, Secretary, Minister of Agriculture. [1905.]
- 10.—“Manures on the Natal Market, 1905,” by Alex. Pardy, F.C.S., Analyst. [1905.]
- 11.—“East Coast Fever,” by S. B. Woollatt, Principal Veterinary Surgeon. [1906.]
- 12.—“Manures on the Natal Market, 1906,” by Alex. Pardy, F.C.S., Analyst. [1906.]
- 13.—“Report on the Disease known as ‘Bluetongue’ in Sheep,” by H. Watkins-Pitchford, F.R.C.V.S., F.R.S.E., Govt. Bacteriologist and Director, Govt. Laboratory. [1908]
- 14.—“Poultry-Keeping in a Simplified Edition for Farmers,” by F.C. [1908.]

### **REPORTS.**

- Annual Report of the Agricultural Department, 1902. (Includes Reports of the Director of Agriculture, Entomologist, Conservator of Forests, Dairy Expert, Editor *Agricultural Journal*, etc.) [1903.]
- Report of the Secretary, Minister of Agriculture: January 1, 1903, to June 30, 1904. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1905. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1906. [1906.]
- (For a continuation of the statistics given in these reports see reprint “Natal’s Progress in 1906,” noted below.)
- Fourth Report of the Government Entomologist: 1903-4. [1905.]
- Fifth Report of the Government Entomologist: 1904-5. [1906.]
- Sixth Report of the Government Entomologist: 1905-6. [1907.]
- (The Third Report of the Entomologist is included in the “Report of the Agricultural Department, 1902,” noted above.)
- Report of the Conservator of Forests, 1902. [1903.]
- Interim Report of the Conservator of Forests up to December 31, 1905.
- Report of the Principal Veterinary Surgeon, for year ended 30th June, 1906. [1907.]
- First Annual Report of the Land Board, 1905. [1906.]
- Annual Report of the Land Board, 1906-7.

## MISCELLANEOUS REPRINTS, ETC.

- Black Spot ("Letter Book Pages": reprinted from *Journal*.)
- Mealie Grubs ( do do )
- Mosquitoes ( do do )
- Woolly Aphis ( do do )
- Cotton. By A. N. Pearson, Director, A. E. & C. (Reprinted from *Journal*: 1904.)
- Co-operation. By E. T. Mullens, Secretary, Minister of Agriculture. (Reprinted from *Journal*: 1907.)
- Citrus Fruit Export. (Reprinted from *Journal*: 1907.)
- Natal's Progress in 1906. (Reprinted from *Journal*: 1907.) The statistics contained in this paper are on the same lines as those in the Annual Reports for previous years of the Secretary, Minister of Agriculture.
- Natal's Progress in 1907. By H. J. Choles, F.S.S. (Reprinted from *Journal*: 1908).
- Fibre Cultivation. (Reprinted from *Journal*: 1907.) This paper is a summary of Bulletin No. 13 of the Department of the Interior, Bureau of Agriculture, Manila.
- Sisal, Mauritius Hemp and other "Aloe" Fibres. By T. R. Sim, F.L.S., Conservator of Forests. (Reprinted from *Journal*: 1907.)
- The Fibre Industry of Mauritius. By Leonard Acutt, J.P., Tongaat; Member of the Land Board, Natal. (Reprinted from *Journal*: 1907.)
- South African Products Exhibition, 1907. Report of T. R. Sim on the Natal Exhibits. (Reprinted from *Journal*: 1907.)
- Poplar Timber for the Local Manufacture of Matches. By E. R. Sawyer, Director, E.S. (Reprinted from *Journal*: 1908.)
- Agricultural Industries and Land Settlement in Natal. [1907.]
- Judging Fruit, Flowers, Plants and Vegetables at Shows. By T. R. Sim, F.L.S., Conservator of Forests. [1906.]
- Agricultural Statistics, Natal, 1905-6. [1907.]
- Model Rules for Agricultural Co-operative Societies. (*Price 1s., post free.*)

## SOUTH AFRICAN STUD BOOK.

A record of all classes of Stock; the object being to encourage the breeding of thoroughbred stock and to maintain the purity of breeds, thus enhancing their value to the individual owner, and to the country generally.

Application for Membership and Entries of Stock should be addressed:—

|                          |    |                                                      |
|--------------------------|----|------------------------------------------------------|
| For CAPE COLONY ..       | .. | A. A. PERSSE, P.O. Box 703, Cape Town.               |
| „ TRANSVAAL ..           | .. | F. T. NICHOLSON, P.O. Box 134, Pretoria.             |
| „ ORANGE RIVER COLONY .. | .. | E. J. MACMILLAN, Government Buildings, Bloemfontein. |

## THE SOUTH AFRICAN STUD BOOK

IS OBTAINABLE OF:—

T. MASKEW MILLER,  
ADDERLEY STREET, CAPETOWN.

PRICE 10s. 6d.

A. A. PERSSE,  
SECRETARY, SOUTH AFRICAN STUD BOOK ASSOCIATION.

# “HOLMES”

## LIQUID SHEEP DIP (Non-Poisonous).

Possesses all the essential ingredients of a successful Liquid Dip. The preparation of this is such that there is not a Liquid Dip sold to beat it for destroying Scab, Ticks, Vermin, etc; for keeping Sheep healthy; for cleansing Drains, Outhouses, Kraals, Stables, etc.

# “HOLMES”

## CATTLE (PASTE) DIP.

Constitutes a record in answering all the requirements of farmers.

NOTE THIS CAREFULLY:

It is one of the surest tick-destroying Dips now in the market. It is free from irritating substances, and while the proportion of mixing is **1 lb. of paste to 12 gallons of water** its price is only **5d. per lb.**, which means (in comparison to other Cattle Dips sold) a **saving from 25 to 50 per cent. in the cost of dipping.**

It remains for all Farmers dipping cattle to insist upon having and using this famous dip.

# “HOLMES”

## SANITARY LIQUID SOAP.

A preparation that dispenses with all soaps. An ideal cleanser. For washing Floors, Rooms, etc. Use **1 cupful of Liquid to a bucket of water.** Nothing more cleansing or economical.

**Secure these through your Merchant or Stores.**

— PROPRIETOR —

# CHAS. W. HOLMES,

202, Longmarket Street, Pietermaritzburg.

OR P.O. BOX 51,

# MOLASSINE

# MEAL

***For  
Stock  
of all  
kinds.***

**Unsurpassed by any other  
Food Condiment.**

EVERY PROGRESSIVE FARMER KNOWS  
ITS VALUE AND USES IT. . . .



**TRY IT** on any animal in low condition and  
CONVINCE YOURSELVES. . .

Packed in 100 lb. Bags and stocked by all Produce  
Dealers.

*RAILAGE AT S.A.P. RATES.*

For Pamphlets, etc., apply to—

**The MOLASSINE CO. (South Africa),  
LIMITED,**

**BOX 400, DURBAN.**

**Factory: MOUNT EDGEcombe.**



**THE FOOD**

for HORSES MULES, COWS, SHEEP,  
PIGS, DOGS, and POULTRY.



---

## **South Devon Cattle.**

---

Celebrated for the Dairy and the Butcher—are hardy and stand a sea voyage well. At the Bath and West Show at Newport in 1907 they beat all others in the Butter test classes; they are the heaviest cattle in the World, and produce beef of the highest quality. Pedigree Auction Sales at Totnes first weeks of October and April each year. All particulars of—

**ALFRED MICHELMORE,** *Secretary Herd Book Society,*  
**Gate House, Totnes, ENGLAND.**

---

## **The Keeling Agency. Ltd.**

OFFICES: **National Mutual Buildings,**  
**P.O. BOX 220, JOHANNESBURG.**

---

**PRODUCE, COMMISSION & EXPORT AGENTS.**

*Predecessors: SPENCE & DRURY, LTD. Established 1880.*

*Successors to (Agency Dept.) ABINGER KEELING & CO.*

*Bankers—The Standard Bank of South Africa Ltd., Johannesburg.*

**Security. Attention. Experience.**

---

## **VETERINARY PAPERS FOR FARMERS,**

—PUBLISHED BY—

**The “Times” P. & P. Co., Ltd.,**

**222, Church Street, and Chancery Lane, Maritzburg.**

**BUTTER MAKING. ABORTION IN COWS.**

**LIVER ROT AND BRAXY.**

**WOUNDS AND CASTRATION.**

**LAMENESS AND HEREDITARY**

**PREDISPOSITION IN HORSES.**

**CURE OF HORSES' LEGS AND FEET.**

**ANTHRAX. TUBERCULOSIS.**

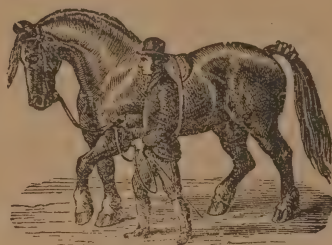
**PARASITIC BRONCHITIS IN SHEEP.**

**By Professor Wortley Axe.**

**Price 1s., Post, 1s. 1d.**

# BENTLEY & VANDERPUMP'S

**CONDITION  
POWDER.**



**PREVENTS  
HORSE  
SICKNESS.**

## READ THE FOLLOWING TESTIMONIALS:—

DEAR SIR,

I have used your Condition Powder and have found it to surpass anything I had tried. My horses felt the benefit of the Powder before many days, and I find that the use of the Powder for a few days from time to time, keeps them in perfect condition and free from disease of every description.

Yours faithfully, EUGENE RENARD.

DURBAN, NATAL, September 11th, 1903.

TO LENNON LIMITED, Durban.

DEAR SIR,

For many years past I have purchased Bentley and Vanderpump's Condition Powders as a Medicine for the Horses and Mules in use at my Brick Fields, and I must say that I cannot estimate the value of the Powders sufficiently, as my stables are always free from sickness, and I have never had any serious outbreak among my stock, which I put down entirely to the regular use of your Powders.

They seem to be the only preventive of Horse Sickness that I know of.

You are at liberty to make what use you like of this letter.

Yours faithfully, J. J. JOHNS

THE BRICK YARDS, UMGENTI, DURBAN, NATAL,

September 26th, 1900.

MESSRS. LENNON LIMITED, West Street, Durban.

DEAR SIR,

I have used Bentley & Vanderpump's Horse Condition Powders continuously during the last four years, and am fully convinced that they act as a preventive, and I have to thank them for the fact that my horse did not take sickness last season when horses died all round me.

I am never without B. & V. Powders in the stable.

WENTWORTH, NATAL.

September 30th, 1903.

Yours faithfully, H. A. JACOB.

**THIS** Powder should be given to all Horses occasionally; it keeps them in good condition by giving tone to the Stomach and purifying the blood. For Grease, Swelled Legs, Coughs and Influenza, it is the Best Remedy.

The dose is a teaspoonful given every night for a week, in a mash or feed of corn, and the horse can be worked as usual all the time, being in fact more fit

IN TINS AT 2/6, 9/- AND 15/- EACH.

May be obtained from Chemists and Store Keepers throughout S. Africa.

SOLE PROPRIETORS—

## LENNON LIMITED

Cape Town.  
Port Elizabeth.  
Johannesburg.  
East London.  
Durban.

Bulawayo.  
Bloemfontein.  
Graaff Reinet.  
Aliwal North.  
Kimberley.

Beaufort West.  
Oudtshoorn.  
Mafeking.  
Fordsburg.  
Germiston.

Wynberg.  
Paarl.  
Stellenbosch  
and  
London, England.

BEWARE OF IMITATIONS.

# Just a Minute, Please !

Can you spare us Sixty Seconds in your own interest?

*Our proposal is Good, because you will Save  
Money Daily, if you follow our advice.*

- 1st. Keep your Money in the Country.
- 2nd. Always use ANDERSON'S SOAPS.
- 3rd. They are the BEST in the MARKET.
- 4th. Don't take the cheapest Brands, but ask for PEARL SOAP, packed in Cartons, ATLAS SOAP, THREE CROWN, or "A1" Blue Mottled.
- 5th. Our Soaps are cheaper than the corresponding qualities of Imported Soaps.
- 6th. This fair country will never go ahead when you allow yourself to be prejudiced against Colonial industries.
- 7th. You are proud of your Colonial-born Sons and Daughters; be also proud of your having enterprising manufacturers in your Colony.
- 8th. We guarantee the quality of our Soaps to be equal to the Imported article, but you must not compare our lowest grade quality with the best grades imported—that would not be fair.

MANUFACTURERS:

## The Natal Soap Works, Ltd.,

P.O. BOX 44.

## Durban.



---

# The Corn Exchange. (ESTABLISHED 1868.)

---

**R. MASON & SON,**  
**289, CHURCH STREET, PIETERMARITZBURG,**  
**MILLERS,**  
 Grain, Produce, and Seeds Merchants.

---

**SPECIAL.**—Boer Meal, Crushed Wheat and Rolled Wheat (Kühne System).

**PIGEON FOODS.**—Maple Peas, Hemp, &c., &c. Poultry and Chicken Mixtures. Thorley's Ovum.

**HORSE-FOOD.**—Rolled Oats, Wheaten Bran, Crushed Mealies, Molassine Meal, Rock Salt, Chaffed Forage and Lucerne, &c., &c., also Cow Meal.

**FARMERS' AGENCY.**—Consignments of Produce of all kinds realised to best advantages. Account Sales prompt with remittances.

---

## SEEDS ! SEEDS !!

We hold Prime Fresh Stocks of:—

**Mangel Wurzel, Swedes, Turnips, Sugar Beet,**  
**Paspalum, Italian and Perennial Ryegrass,**  
**Provence Lucerne, Rape (Dwarf Essex), Thousand**  
**Headed Kale, Cow Peas, Black Wattle,**  
**etc., etc.**

---

For description, mode of cultivation and prices, see our New Catalogue (free on application).

---

**R. MASON & SON,**

THE CORN EXCHANGE SEEDS DEPARTMENT,

**289, Church Street, Maritzburg.**



P.O. Box  
21

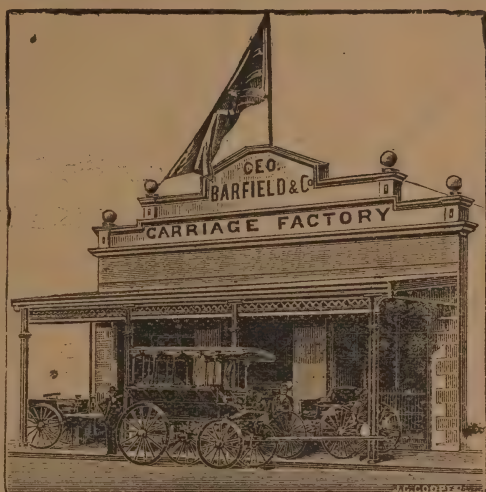
**GEORGE BARFIELD & CO.,**

TELEPHONE  
391

**212, Longmarket Street, Maritzburg.**

**Builders of High-  
Class Vehicles.  
Both for Town  
and  
Country Use.**

**New and Second-  
hand Vehicles al-  
ways on Hand.**



**Estimates given  
for all kinds of  
Carriage Work.**

**Direct Importers.**

**The Trade sup-  
plied at most rea-  
sonable Prices.**

**The Wattle Extract Co.**

**16 & 17, ANGLO-AFRICAN HOUSE,  
SMITH STREET, DURBAN.**

—BUYERS OF—

**WATTLE BARK**

**IN ANY QUANTITY. PROMPT SETTLEMENTS ON RECEIPT OF GOODS.**

**HIGHEST PRICES GIVEN. NO COMMISSION CHARGED.**

**- - CORRESPONDENCE INVITED - -**

**P.O. Box 734.**

**Telegrams: "ATLANTIC."**

# A . . . FRUIT GROWER'S HANDBOOK

BY

CLAUDE FULLER.

---

PREPARED FOR THE USE OF FRUIT GROWERS, WITH NUMEROUS  
SELECTED ILLUSTRATIONS.

---

**Price 7s. 6d., including Postage.**

---

**THE TIMES PRINTING & PUBLISHING CO., LTD.,**

P.O. BOX 204.

*The Times Printing & Publishing Co., Ltd.,*

*P.O. Box 204, Pietermaritzburg.*

*Please send me.....cop.....of the book entitled "A Fruit Grower's Handbook," by Mr. Claude Fuller, for which I enclose £      s.      d.*

[Sign here] \_\_\_\_\_

Address \_\_\_\_\_

## *Calvert's Carbolated Creosote*

Is the most reliable DISINFECTANT for all purposes. Mixes readily in cold water, and can be used as a wash for Cattle, Horses and Dogs. No farmer should be without it. Price is low and quality guaranteed. In 1 gall. Tins, 5 or 10 gall. Drums, and 50 gall. Casks. Prices on application to:—

**Agent for** **J. M. Wilson, 398, West Street, Durban.**  
**F. C. Calvert & Co.'s Preparations.** P.O. BOX 282.

Postal  
Address:  
P.O. 176,  
Maritz-  
burg.

### **FARMERS, STUDY YOUR INTERESTS**

By Buying Sound and Reliable Goods.

- - THIS CAN BE DONE - -

By placing your orders with

Tele-  
graph  
Address  
Saddlery,  
Maritz-  
burg

**LYLE BROTHERS,**

**Saddlers Harness,  
and Bag Makers**

**246, Church Street, Maritzburg.**

Whose endeavour has always been to give the best value at lowest possible prices consistent with quality  
 Harness and Saddlery of every description made to order. Large Stocks on Hand.

**REPAIRS EXECUTED WITH NEATNESS AND DESPATCH.**

Branches—LADYSMITH, DUNDEE, AND VRYHEID

## **HAYNE & CO.,**

**GENERAL BUYERS OF NATAL PRODUCE.**

**Mealies, Kafir Corn, Wattle Bark,**

**ETC., ETC., ETC.**

— ADDRESS —

**72 & 74, COMMERCIAL ROAD, DURBAN.**

— ALSO AT —

**8, HARRISON STREET, JOHANNESBURG.**

IN THE KITCHEN.

Rich, wholesome, palate-tempting soups; delicious thick gravies; cups of invigorating beef tea—BOVRIL will help you to make them all.

# BOVRIL

Every kitchen should have BOVRIL.

By Royal Warrant to



His Majesty the King.





# **TO FARMERS.**

## **Cheap Advertising.**

### *The "Times of Natal."*

SPECIAL NEW SCALE

— FOR —

SMALL PREPAID ADVERTISEMENTS

— IN —

## **PEOPLE'S COLUMNS.**

*A POPULAR AND EFFECTIVE METHOD OF ADVERTISING.*

The "Times of Natal," with a view of still further popularising the paper as a medium for the insertion of "Small" Advertisements, have arranged a REVISED SCALE OF CHARGES for this class of advertisements.

Special Headings are given to '**LIVE STOCK**,' '**PRODUCE**,' etc., and thus Farmers' announcements enjoy a particular prominence,

*This Scale only applies to advertisements accompanied by remittance. Advertisements of this class, which are not prepaid, will be charged at a higher rate.*

## **SCALE OF CHARGES.**

| NUMBER OF WORDS.          | NUMBER OF INSERTIONS. |        |         |                   |
|---------------------------|-----------------------|--------|---------|-------------------|
|                           | One.                  | Three. | Six.    | Over Six.         |
| 20                        | 1s.                   | 2s.    | 3s.     | 6d. per insertion |
| 30                        | 1s. 6d.               | 3s.    | 4s. 6d. | 9d. "             |
| 40                        | 2s.                   | 4s.    | 6s.     | 1s. "             |
| 50                        | 2s. 6d.               | 5s.    | 7s. 6d. | 1s. 3d. "         |
| Every additional 10 Words | 6d.                   | 1s.    | 1s. 6d. | 3d. "             |



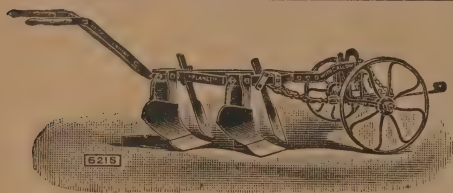
## DISC HARROWS,

. . With Steel Weight Trays and Trucks.

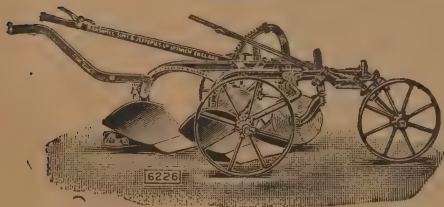


## NEW MODEL Alfa Laval Cream Separator,

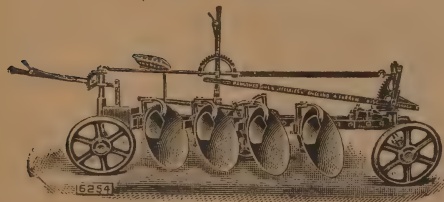
Never beaten in competition.



PLANET.



INVINCIBLE.



DISC.

**RANSOME'S**  
**PLANET,**  
**INVINCIBLE,**  
**AND DISC**  
**PLOWS.**  
**ALL PRIZE TAKERS.**

**STEEL MURRAY & Co.,**  
**PIETERMARITZBURG.**

# J. MERRYWEATHER & SONS, Wagonmakers, Blacksmiths, &c.,

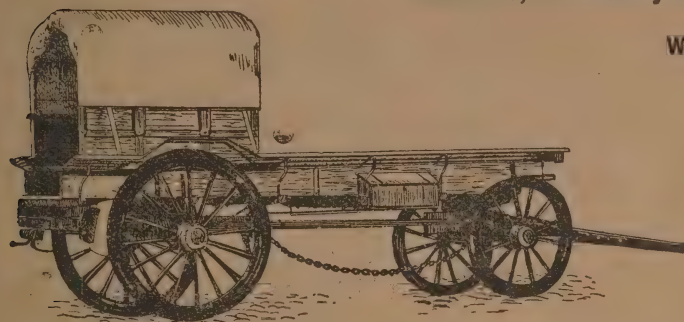
Supply Wagons of every description on Shortest Notice and at Low Prices; Workmanship and Material Guaranteed. Tip Carts, Light Delivery Carts; also Light Spring Carts suitable for Farmers and Dairymen.

**TROLLEYS, both Heavy and Light.**

**WHEELBARROWS.**



All Sizes of Wheels  
in Stock or Made  
to Order. }



Sneezewood, Stinkwood, Stinkwood Shafts Sawn or Bent to Shape, Forgings, either for Ploughs Wagons, or Mowing Machines.

**352, CHURCH STREET, PIETERMARITZBURG.**

BY SPECIAL  
APPOINTMENT TO



HIS EXCELLENCY  
SIR HENRY MCCALLUM,  
K.C.M.G.

# M'CRYSTAL & HARKNESS,

***Saddlers and Harness Makers,***

**186, CHURCH STREET, PIETERMARITZBURG.**

— WE ARE SPECIALISTS FOR —

# AGRICULTURAL SEEDS

We stock the following and many other varieties:—

**Kale**

**Serradella**

**Fescue**

**Lucerne**

**Cocksfoot**

**Paspalum**

**C. Starke & Co., Ltd., Mowbray, C.C.**

— WRITE FOR PRICE LISTS. —



**FLEET.**

|                  | Tons. |
|------------------|-------|
| S.S. Umhlali ... | 5,000 |
| " Umzumbi...     | 5,000 |
| " Umvolosi...    | 4,500 |
| " Umsinga ...    | 4,500 |
| " Umtata ...     | 3,500 |
| " Umgeni ...     | 3,500 |
| " Umvoti ...     | 3,500 |
| " Umtali ...     | 3,500 |

**FLEET.**

|                 | Tons. |
|-----------------|-------|
| S.S. Umfuli ... | 3,300 |
| " Umhloti ...   | 3,100 |
| " Umkuzi ...    | 2,800 |
| " Umbilo ...    | 2,500 |
| " Umlazi ...    | 2,200 |
| " Umzinto ...   | 2,200 |
| " Congella ...  | 2,200 |
| " Pongola ...   | 1,800 |

## FORTNIGHTLY FAST DIRECT SERVICE BETWEEN LONDON      AND      NATAL.

### *To Importers of LIVE STOCK, POULTRY & DOGS:—*

This Line of Steamers affords excellent advantages for the importation of Live Stock of all kinds, and has an unrivalled record for the carriage of the best Pedigree Live Stock and Poultry of the Colony.

The Steamers of the London Service have Saloon accommodation amidships on the Main Deck, and are fitted with Refrigerators, Electric Light, and Bells. Surgeon and Stewardess carried.

Particulars of Sailing Dates, Freight, and Passage may be had on application to:—

**KING & SONS, WEST STREET, DURBAN**

***If You are INTERESTED in the INDUS-  
TRIES OF THE COLONY, You are the  
man we WANT TO TALK TO.***

— FOR —

## Spiders, Buggies, Carts, etc.,

We are holding our own against all comers.

We have won 7 Medals in six weeks at 3 Shows.

At the Royal Show, 1908, in the best turnout, the 1st and 3rd prizes were awarded to carriages which were built at our factory.

Get our prices and photos and copy of testimonials. All wheels made at our factory. Note address—

## **H. W. Reeve & Co.,**

UMVOTI STEAM CARRIAGE  
AND WAGON WORKS . . .

## **GREYTOWN.**



# FERTILIZERS.

WE ARE NOW BOOKING ORDERS FOR—

**SUPERPHOSPHATE, ALL GRADES,**

**BASIC SLAG,**

**BONE MEAL,**

**POTATO MANURE, SPECIAL,**

**POTATO MANURE, FARMERS,**

**MIXED MANURES OF ALL KINDS,**

**NITRATE OF SODA,**

**MURIATE OF POTASH,**

**AND ALL OTHER MANURES.**

ALL OF THE BEST QUALITY AND WITH A GUARANTEED ANALYSIS.

WRITE FOR PRICE LIST.

— SOLE AGENTS FOR —

J. & F. HOWARD'S celebrated B.Z., T.C.C.C., N.A., and other high class Ploughs, Harrows, &c.

BRADLEY'S Gang, Disc and "Royal Blue" Ploughs, Disc Harrows MEALIE PLANTERS, &c.

MASSEY-HARRIS Binders, Reapers, Mowers and Rakes.

HARDWARE, FURNITURE, CROCKERY.

**P. Henwood, Son, Soutter & Co.,**  
**DURBAN and MARITZBURG.**

# Summer Planting

SEASON 1908-9.

**MAGNIFICENT STOCK**

OF

**Orange, Lemon, and other  
Citrus Fruit Trees,**

In all the leading varieties, guaranteed true to name, and sold in accordance with Government Ordinance for preventing introduction of Insect Pests and Plant Diseases.

TRADE



MARK

Trees delivered free to any Railway Station in South Africa at from **2s.** to **4s.** per tree, according to size of tree and quantity ordered.

For full particulars see new Catalogue, sent post free on application to

**H. E. V. Pickstone & Bro.,**

*P.O. Groot Drakenstein, C. C.*

# THE Petrolite Lamp.



**PORTABLE. INCANDESCENT.**

**NO LIQUID. NO WICK.**

IF OVERTURNED GOES OUT. ACCIDENTS IMPOSSIBLE.  
NO WORKING PARTS. COSTS LESS THAN PARAFFIN.  
SIX HOURS OF BRIGHT, STEADY 50-CANDLE-POWER  
LIGHT FOR ONE PENNY.

**Awarded the Keith Prize for Safety & Economy**

**INSURANCE NOT AFFECTED BY ITS USE.**

— **SOLE AGENT** —

**John Mayhew, 2, Castle Arcade, Durban.**

---

## **HUNT, LEUCHARS & HEPBURN, LTD.,**

---

**TIMBER MERCHANTS, . . . DURBAN.**

**Large Stocks of TIMBER, GALVANISED IRON and all  
BUILDING REQUISITES.**

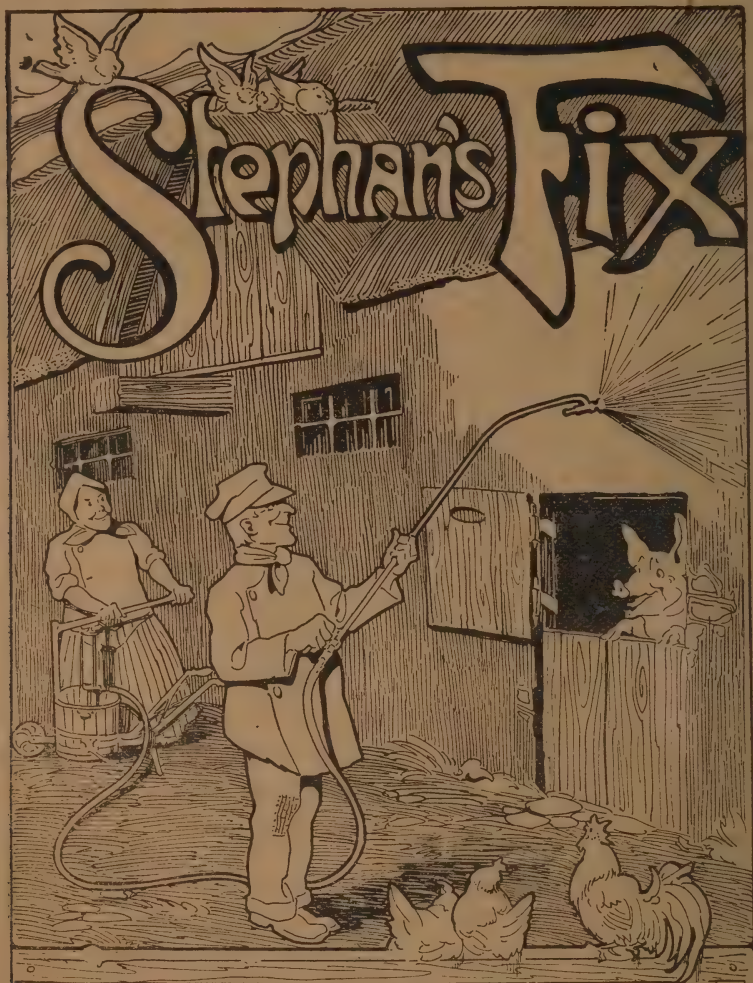
**Estimates given for Wood and Iron Buildings of Every Description and All  
Classes of Joinery Work.**

**GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.**

**P.O. Box 455.**

**Telegraphic Address : "HUNT."**

**And at JOHANNESBURG.**



## AWAY WITH BRUSHES!

BEST WHITEWASHING-DISINFECTING MACHINE.

REPLACES 10 TO 20 MASONS.

"FIX" is employed for painting Stalls, Walls, Dwelling Houses, Breweries and Fermenting Cellars; and can be put to various other uses.

*"Fix" spares Time, Money and Work.*

Apply for Prospectus at the Offices of this Journal. Agents wanted.

Manufacturer:—**STEPHAN, Scharley, Germany.**



---

# STEWARTS AND LLOYDS (SOUTH AFRICA) LTD.,

---

MANUFACTURERS OF WROUGHT IRON

## **TUBES AND FITTINGS**

FOR GAS, STEAM, AIR, AND WATER.

**BOILER TUBES. WELL TUBES.**



### DURBAN STORE.

Large Stocks held in Durban and Maritzburg of all Sizes  
from  $\frac{1}{4}$  in to 12 in. English and American Thread.

**BOILER TUBES** from 2 in. to 4 in.

**All Classes of Valves and Cocks Stocked.**

---

**Durban Office: 310a, SMITH STREET.**

P.O. BOX 131.

Stores: **SMITH STREET.**  
**MILNE STREET.**

Telephone No. 352.

Tele. Add.: "TUBES," Durban and  
Pietermaritzburg.

**Maritzburg Stores and Offices: COMMERCIAL ROAD.**

**HIGHLY  
REMUNERATIVE  
INDUSTRY.**



**ONLY SMALL  
INVESTMENT  
NECESSARY.**

## **The Best and Cheapest Building Materials**

Are BRICKS, ROOFING TILES, FLOORING TILES, WALL COVERING PLATES, SEWER PIPES made of sand, gravel, slag, chippings, mixed with cement or lime according to the simple and renowned process "system Dr. Gaspary," by means of

**Machines and Moulds (Dr. Gaspary's),**

AT VARIOUS PRICES.

**APPLY FOR PAMPHLET No. 150 (Gratis).**

Information given free of charge in all modern languages (spoken and written). Foremen-instructors at disposal of buyers of machines to set factories going. Largest Special Machine. Works for the Utilisation of Sand.

**Leipziger Cementindustrie, Dr. Gaspary & Co.,  
Markranstädt (near Leipzig), GERMANY.**

# **Lime! Lime! Lime!**

THE CRYING NEED OF NATAL SOILS  
CAN BE OBTAINED FROM

**FOWLIE, BODEN & CO.,  
397, SMITH STREET, DURBAN.**

**Price of Agricultural Lime,  
35s. nett per 2,000 lbs.**

**FREE ON RAIL, PORT SHEPSTONE.**

# **FENCING MATERIAL**

Large Stocks of Barbed and Plain Wire  
Standards and Straining Posts.

## **GATES,**

Cyclone Droppers (or Pickets) and Loops  
in Stock or Made to Order.

Also Cyclone Patent Lever Gate.

## **CYCLONE GATE & FENCE CO., LTD.**

315, CHURCH STREET (Opposite Market Square).

Telegrams—"CYCLONE."

BOX 289.

P.O. BOX 879.

Telegraphic Address: MILJNG, DURBAN.

## **The Natal Mill Elevator Co.**

Bankers: The Natal Bank, Ltd.

Mills: UMBILO.

Offices: 319, SMITH STREET, DURBAN.

—WE ARE—

**BUYERS OF MEALIES AND WHEAT**

—IN ANY QUANTITY—

\* **FOR CASH.**



# G. MONHAUPT & Co.,

CABLE ADDRESS—

"MONHAUPT."

P.O. BOX 26.

TELEPHONE 308.

*The Esplanade* (Corner of  
Mona Rd.),

*Durban, Port Natal.*

— Exporters of —

Wool, Mohair, Hides, Skins, Bark, Maize and other Produce.

Woolpacks, Grain Bags and Bark Bags always on hand.

— Agents for —

BUREAU VERITAS GERMANISHER LLOYD

CLASSIFICATION OF SHIPS.

ASSOCIATIONS OF HAMBURG AND BREMEN UNDERWRITERS.

— SETTLEMENT OF CLAIMS. —

## REID & ACUTT'S WOOL MART, Ltd.

*Mona Road and Esplanade, Durban.*

**WOOL SALES.**

Sales of Wools, Mohair, Hides, Skins, Horns, Wattle Bark, &c.,  
**HELD EVERY WEDNESDAY, AT 12 NOON,**

— And Special Sales when necessary. —

**Liberal Advances made on Produce. Prompt Settlements.**

*Reid & Acutt's Wool Mart, Ltd.*

MANAGING DIRECTOR

SIDNEY A. GREEN.

"WOOLPACK."

x 705.

WM. P. ANDERSON,  
Secretary.



# THEO. SCHLOSS,

*3 & 4, Anglo-African House,*

P.O. BOX

270.

*Smith Street, Durban.*

Telegrams—

'Brokerage'

BUYS . . **Wattle Bark** IN ANY  
AND  
**Mealies** . . QUANTITY

FOR

Prompt Cash and Pays Highest  
Current Market Rates.

It will pay you to communicate with above before selling elsewhere.

## PERIODICALS . .

RELATING TO

**Farming and Agriculture.**

**1909.**

Avoid disappointment in receiving your Newspapers and Magazines promptly, by  
placing your order **AT ONCE.**

**Accuracy and Regularity guaranteed.**

**Lists sent free on application.**

—THE—

**"Times" Printing and Publishing Co., Ltd.**

222, Church Street, and Chancery Lane, Pietermaritzburg.

# CLARKE BROS. AND BROWN, LTD.

Specialists in Butchers', Bakers', & Dairymen's Requisites.

Sole Agents for **Ear-Rivets** for Marking Sheep, Cattle,  
and all kinds of Live Stock.

LARGE STOCKS OF ALL KINDS OF DAIRY MACHINERY  
AND APPLIANCES.

Plans and Estimates for  
complete Factory Plants  
for Milk Pasteurizing,  
Butter Making and  
Cheese Making, for-  
warded on receipt of full  
particulars.

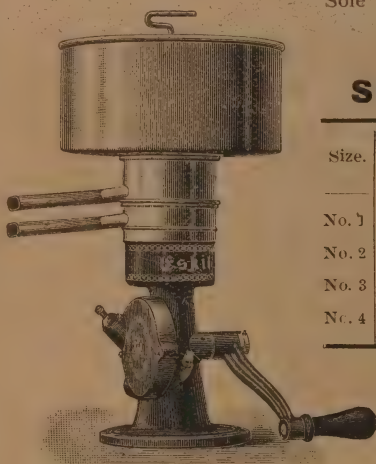
WRITE FOR OUR ILLUS-  
TRATED CATALOGUE.

Sole Agents for the  
**"Eskil" Cream  
Separator,**

Made in one size only :  
Guaranteed capacity

10 Gallons per Hour.

Price £4 15s. Nett.



Sole Agents in South Africa  
for the

**"VEGA"  
SEPARATOR.**

| Size. | Guaranteed<br>Capacity per<br>Hour. | Price.   |
|-------|-------------------------------------|----------|
| No. 1 | 17 Gallons.                         | £8 10s.  |
| No. 2 | 28 Gallons.                         | £10 10s. |
| No. 3 | 45 Gallons.                         | £14 10s. |
| No. 4 | 72 Gallons.                         | £19 10s. |

Sold under full  
Guarantee.

*AWARDS 1908.—First Prizes have been won at Rose-  
bank, Port Elizabeth, and Johannesburg, for  
Best Collection of Dairy Appliances and  
Machinery,*

For Prices and all particulars, please apply to—

**CLARKE BROS. & BROWN, LTD.,**  
**Dairy Supply Department,**  
**287, Pine Street, DURBAN.**

—  
AGENTS, CAPETOWN, EAST LONDON, AND PORT ELIZABETH

# J. A. PETERS,

## Forage & Corn Merchant,

### Army Contractor,

## 184, Commercial Road,

## MARITZBURG,

Has for Sale at Lowest Rates:—

|             |                                                                                                     |               |
|-------------|-----------------------------------------------------------------------------------------------------|---------------|
|             | French Early Rose Seed Potatoes<br>(just arrived).                                                  |               |
| RACE        | Algerian Seed Oats (reputed rust-<br>resisting).                                                    | SPECIALITIES. |
| HORSE       | Lucerne Seed.                                                                                       | IN            |
| FOOD        | Compressed Fodder (American and<br>Australian), Lucerne, Australian<br>and American Bran, Oil Cake. | HORSE BEANS.  |
| A           | Best Whole and Rolled Feed Oats.                                                                    | AND           |
| SPECIALITY. | Pigeon Peas, Fowls' Food, Oyster<br>Shell.                                                          | PIGEONS'      |
|             | Coolie Rice, Dhall.                                                                                 | PEAS.         |
|             | Training and Ordinary Feed Forage<br>always on hand, and all kinds of<br>Produce.                   |               |

**COLONIAL PRODUCE BOUGHT AND DELIVERY TAKEN  
AT ANY RAILWAY STATION.**

Postal Address : P.O. BOX 197

Telegrams : " "

## **Stud, Stock, and Farm.**

**RATES OF CHARGES.**—20 words for 3 months, 3s. 30 words for 3 months 4s. 6d. 40 words for 3 months, 6s. Intending advertisers are requested to communicate with the Publishers direct.

### **STUD and STOCK.**

**P. OTTO, J.P., SOMERVILLE, RIET VLEI,** Breeder of Pure-Breed P. FRIESLANDS, RAMBOUILLET RAMS, AYLESBURY DUCKS, DORKINGS, AMERICAN BRONZE TURKEYS.

**WILLIAM WOOD, "WOODFIELD" STUD FARM, NOTTINGHAM ROAD.**—Breeder of Pedigree and Grade South Devon Cattle (heavy milking strain). Milk register kept. Young Bulls for sale. Also Shropshire Down Sheep (prizes won last season included a championship open to all breeds).

**P. D. KIMBER, MARITZDAAL, THE DARGLE.**—Breeder of Yorkshire Coach Horses, Cleveland Bays, Hackneys, and Pure Breed Shetlands. Stallions, Mares, Young Stock, Saddle Horses, Remounts and well-matched Pairs always on sale. Young Horses selected privately trained to saddle or harness to suit purchasers. Also Breeder of Shorthorn Cattle.

### **POULTRY.**

**BUFF ORPINGTONS,** Silver and Golden Wyandottes, Black Minorcas. Won over 200 prizes in two seasons. Eggs for sitting, 15s. per sitting of fifteen (carriage paid). Cockerels from 10s. Correspondence invited.—**MRS. R. F. DOTT,** Kenilworth, Kimberley, C.C.

### **WANTED.**

**BONES AND FAT;** any quantity. Best prices given.—Apply, **WEBSTER,** Bisley.

### **FOR SALE.**

**TREES.**—Young Forest and Ornamental Trees, Eucalypts, Pines, Grevilleas, Blackwoods, Beefwoods, Pepper Trees, Silver Trees, Kei-apples, Privets, etc., 8s. 4d. per hundred, or in separate tins, 6d. and 1s. each.—**T. R. SIM,** 168, Burger Street (Nursery, 271, West Street), Maritzburg.



## Index to Advertisements.

|                                      | PAGE.                |
|--------------------------------------|----------------------|
| Barfield, George, & Co.              | 7                    |
| Bifurcated & Tabular Rivet Co., Ltd. | iv.                  |
| Bovril                               | 10                   |
| Clarke Bros. & Brown, Ltd.           | 24                   |
| Cooper, Wm., & Nephews               | viii.                |
| Cotts, Wm., & Co.                    | v., vi.              |
| Cyclone Gate & Fence Co., Ltd.       | 21                   |
| Dott, R. F.                          | 26                   |
| Dr. Gaspary & Co.                    | 20                   |
| Fowlie, Boden & Co.                  | 20                   |
| Gradwell, M. W.                      | iv.                  |
| Gradwell, W. B., & Sons              | iv.                  |
| Hayne & Co.                          | 9                    |
| Henwood, P., Son, Soutter & Co.      | 15                   |
| Holmes, Chas. W.                     | 1                    |
| Hunt, Leuchars & Hepburn, Ltd        | 17                   |
| Keeling Agency, Ltd., The            | 3                    |
| Kimber, P. D.                        | 26                   |
| Little's                             | 10                   |
| Lennon, Ltd.                         | 4                    |
| Lyle Brothers.                       | 9                    |
| Malcomess & Co., Ltd.                | (Cover—back, inside) |
| Mason & Son                          |                      |
| Mayhew, John                         |                      |
| McCrystal & Harknes                  |                      |
| Merryweather, J., & Sons             |                      |

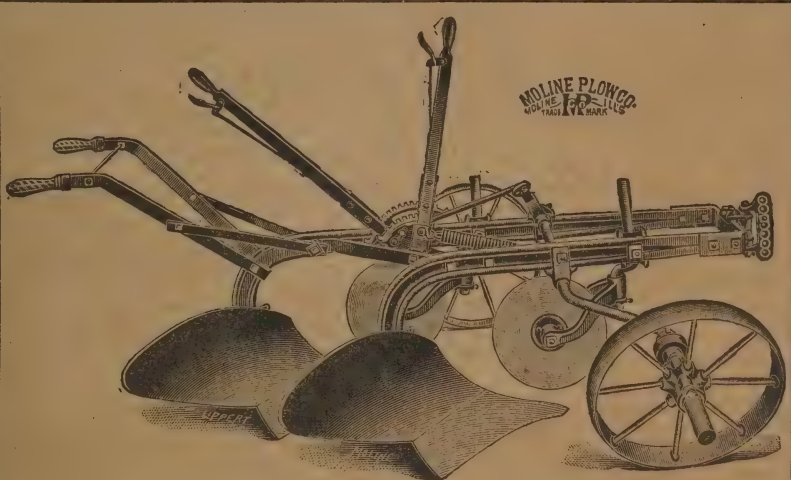
# INDEX TO ADVERTISEMENTS.

|                                    | PAGE.                 |
|------------------------------------|-----------------------|
| Michelmore, Alfred                 | 3                     |
| Molassine Co., Ltd., The           | 2                     |
| Monhaupt, G., & Co.                | 22                    |
| Natal Direct Line                  | 14                    |
| Natal Mill Elevator Co., The       | 21                    |
| Natal Soap Works, Ltd.             | 5                     |
| North, G., & Son                   | ii.                   |
| Otto, P.                           | 26                    |
| Peters, J. A.                      | 25                    |
| Pickstone, H. E. V. & Bro.         | 16                    |
| Raw, J., & Co.                     | iii.                  |
| Reeve, H. W., & Co.                | 14                    |
| Reid & Acutt's                     | 22                    |
| Schloss, Theo.                     | 23                    |
| Sim, T. R.                         | 26                    |
| Simmons, P. D.                     | (Cover—back, outside) |
| South African Fertilizers Co., The | i.                    |
| Starke, C., & Co.                  | 13                    |
| Steel Murray & Co.                 | 12                    |
| Stephan's                          | 18                    |
| Stewart & Lloyds                   | 19                    |
| Wattle Extract Co., The            | 7                     |
| Webster                            | 26                    |
| Wilson, J. M.                      | 9                     |
| Wood, William                      | 26                    |

**OUR NEW STYLE.**  
**High Class Gang Plough.**

***The Canadian Chief***

Represents the latest achievement in the construction of Advanced Agricultural Implements of entirely new and greatly superior design.



**Awarded First Prize, Johannesburg Trials,**  
**— 1908. —**

As the acknowledged leaders of the plough trade we have always been to the fore in introducing the most advanced implements, and our latest improvement, THE CANADIAN CHIEF, is unquestionably the finest two-furrow gang plough ever imported into South Africa. It is simple and light in draft, whilst all the most up-to-date improvements in plough construction have been embodied in it. THE CANADIAN CHIEF is meeting with phenomenal success, and everywhere gives perfect satisfaction.

**Malcomess & Co., Ltd.,**

ESTABLISHED  
1870.

**East London & Durban**

# AT STUD



For Season 1908,

**THE THOROUGHBRED HORSE**

**"BAY LAWN."**

**By 'Green Lawn,' by 'Kendal,' etc.  
Out of 'Tester,' by 'Fernandy,' etc.**

"BAY LAWN," is a sure foal-getter and runs with mares by day. He is winner of many races. 1st at Durban Show (only time shown).

**FEE—7 GUINEAS** for blood mares and moderate fee for ordinary mares, with reduction for two or more. Free summer run.

## **- FOR SALE -**

Shorthorn Bulls, Cows and Heifers, Shropshire Down Rams, Riding and Driving Horses, Milk Cows.

### **POULTRY.**

Plymouth Rocks, Buff Orpingtons, Black-Red Old English Game, White Wyandottes, Old English Game Bantams, Rouen Ducks, White Leghorns, Indian Game. Sittings of 13 eggs from above, 10s. 6d. All returned unfertile eggs replaced.

**For Lease** Blood Pony Fillies by "ARCANO." Many of this strain are winners, which includes "CHARITY CLOAK" (one of the best ponies ever bred in South Africa); "ARCANE" (champion pony in South Africa for his height); "VOLCANO," "ARCANESS," "ARCADIENNE," "QUEEN ANNE," and many others.

**Apply—**

**P. D. Simmons,**

**Farms, Mooi River, Natal.**



## Special Interest :

THE MAIZE CROP 1908-9.

EXPORT OF APPLES.

STRIPPING SUGAR CANE—IS IT ADVISABLE?

CO-OPERATION AMONG SWEET-POTATO GROWERS.

A CHAT ABOUT MEALIES.

RUBBER v. BARK FOR TANNING.

A FARM APPRENTICES' BUREAU.

Notes and Comments.—Exchange Reviews.—Among the Farmers—  
Entomologist's Notes.—Market Supplement, etc., etc.



PRINTED AND PUBLISHED FOR THE DEPARTMENT OF AGRICULTURE  
BY TIMES PRINTING AND PUBLISHING COMPANY, LTD.,  
PIETERMARITZBURG.

### SUBSCRIPTION :

**FIVE SHILLINGS** per annum (in advance), post free.

Republic  
acknowledgment

The Journal may be obtained from the Publishers  
PRINTING AND PUBLISHING COMPANY, LIMITED, MARITZBURG  
upon payment in advance at any time of an Annual Subscription of  
With the exception of the Portuguese Colonies, the Journal is franked to  
all parts of South Africa. Postage to England, 2s. 6d. per Annum extra.  
Business Communications to be addressed to the Publishers.

The Journal is issued on the last Friday of every month.

Literary Communications to be addressed to the Editor, "Agricultural  
Journal," Department of Agriculture, Maritzburg.

Matter for advertisements or alterations in standing advertisements must  
be sent to the Publishers not later than the 18th of the month.

ADVERTISEMENTS. i.

---

# **SAFCO**

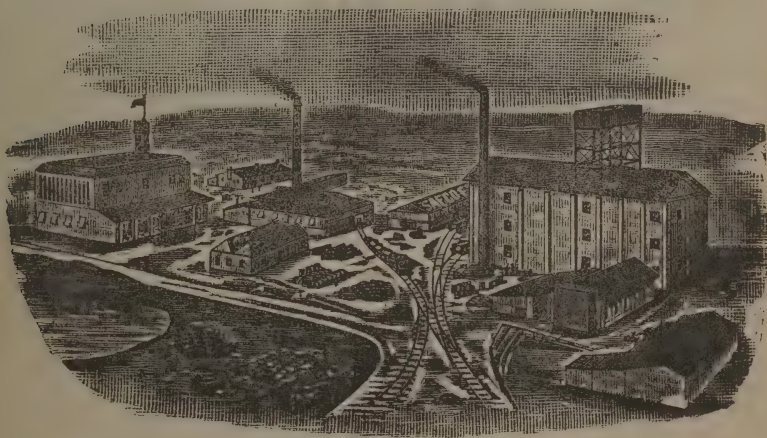
---

## **- FERTILIZERS -**

---

—ARE USED BY ALL—

**UP-TO-DATE and PATRIOTIC FARMERS.**



**SAFCO WORKS, UMBILO.**

**SAFCO Fluid Dip.**

**SAFCO Powder Dip.**

**SAFCO Cattle Lick.**

**Vaporite.**

---

### **THE SOUTH AFRICAN FERTILIZERS CO.,**

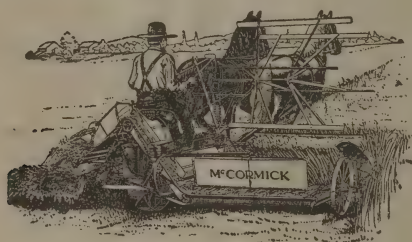
TELEGRAMS: **UMBILLO, DURBAN.** TELEPHONE: **No. 26, Durban.**

# WANTED, FARMERS

. . . TO TAKE NOTE. . .



TO enable you to produce the best results from your lands you must use the best of Agricultural Implements and Machinery, and these Implements and Machines should be the ones that have been tried and proved, such as sold by G. NORTH & SON, the old-



established firm of Agricultural Implement and Machinery Merchants, who are noted for their Agricultural Implements and Machinery. The fact alone that G. NORTH & SON have been 40 years in the trade, and hold the record of 137 Prize Medals awarded to them at Shows and Plough Trials, is the best assurance that they are the firm to supply the Farmers' wants.

## **G. North & Son**

P.O. Box 916, P.O. Box 127, P.O. Box 493, P.O. Box 126,

**DURBAN. MARITZBURG. JOHANNESBURG. PRETORIA.**



ILLUSTRATED CATALOGUE AND PRICE LIST FREE ON  
APPLICATION.



---

# Alex. Cross & Son's

(LIMITED)

## **FERTILIZERS.**

HIGH GRADE SUPERPHOSPHATE.

ORDINARY SUPERPHOSPHATE.

BASIC SLAG.

DISSOLVED BONE COMPOUND.

POTATO GUANO.

ROOT GUANO.

BONE DUST.

STEAMED BONE FLOUR.

All of Best Quality . . .

. . . Prices Moderate.

---

*WE GUARANTEE EXECUTION OF ALL ORDERS  
BOOKED WITH US FOR COMING SEASON. . . .*

---

**J. RAW & Co.,**  
**. MARITZBURG .**

SOLE AGENTS FOR NATAL.

## Friesland Pedigree Cattle.

**W. B. GRADWELL & SONS,  
Holmesdale, Bloemfontein.**

Breed from the purest strains of U.S.A. Fries Cattle: Light framed and hardy, quality and quantity of milk splendid, hard to beat anywhere in South Africa.

## PURE-BRED RED AFRIKANDER STUD CATTLE


of the purest strain, large frames and milking qualities a speciality. Prizes won at all S.A. Shows. Orders booked for young bulls delivered F.O.R. Bloemfontein.



## CURE AND PREVENTATIVE FOR WIRE WORM — IN SHEEP AND GOATS —

— AND —

## Preventative for Tapeworm in Lambs.

**BERT BOWKER'S CURE.** Trade Mark—  
A MERINO RAM. 

## At Last! A Certain and Safe Cure and Preventative for Wire Worm in Sheep.

*Discovered by a South African Farmer.*

A Powder Dose that has stood a three years' test, and proved absolutely right before offered to sheep farmers.

THE COST IS 3s. per lb., SUFFICIENT TO DOSE 64 FULL GROWN OR 90 SHEEP OF MIXED AGES.

Invest the trifle and save your sheep from this fatal disease. It is also a sure preventative for "Geel Ziekte."

All orders and enquiries receive the prompt personal attention of the Proprietor and Manufacturer,

Woodlands, P.O. Carlisle Bridge,  
CAPE COLONY.

**M. W. GRADWELL.**

**WATTLE BARK**

**MEALIES**

**AND . .**

**NATAL PRODUCE.**

We are Buyers for Spot Cash.

**Wm. Cotts & Co.,**

**Natal Bank Buildings, DURBAN**

**Produce Merchants, Importers and**

**Exporters . . . . .**

**Telegrams : "COTTS," DURBAN.**

**P.O. BOX 80, DURBAN.**

**“ROSEBUD”**

**. . FLOUR**

**IS**

**THE**

**BEST**

**FOR HOUSEHOLD USE.**

**STRENGTH, WHITENESS AND QUALITY  
. . UNSURPASSED . .**

**== TRY IT! ==**

**. . Stocked by all Storekeepers . .**

**WM. COTTS & CO.,**

**IMPORTERS**

**P.O. BOX 80, DURBAN.**



# QUIBELL'S DIPS.

## **CATTLE PASTE DIP.**

The popularity of this famous Dip is still maintained. Its reputation for keeping Cattle and Horses in a healthy condition is known to almost every farmer.

## **SHEEP FLUID DIP (Non-Poisonous).**

The most efficient emulsifying Dip on the market, without exception. Thousands of gallons sold in the Colony annually.

## **SHEEP POWDER DIP (Poisonous).**

In cases containing 48 packets. Mixes readily, cures the SCAB, kills the parasites as they hatch from the egg; improves the wool.

## **DISINFECTANTS.**

### **KEROL.**

Awarded the Gold Medal for Disinfectants at the Franco-British Exhibition, London, 1908.

### **INFALLIBLE FLUID.**

A powerful but cheaper Disinfectant.

### **KEROL SANITARY POWDER.**

Guaranteed to be four times more powerful than a 15 per cent. Carbolic Powder.

*Please order your Dips and Disinfectants through  
your Merchant.*

Agents—

**A. J. KEELER & CO., Point, Durban.**

City Representatives—

**W. H. GRIFFIN & SONS, Hosking's Chambers, Exchange Lane, MARITZBURG.**

Cures Scab.

Kills Ticks.

Dip

Looker's  
none  
so good.

Never Fails.

Improves the Wool.

Costs less than  
Home-made Dips.

*Vol. XII., No. 1.*

*JANUARY 29, 1909.*



. . . THE . . .  
NATAL  
AGRICULTURAL  
JOURNAL

---

Published for and Edited in the Department of  
Agriculture.

---

**Publishers :**

THE "TIMES" PRINTING AND PUBLISHING COMPANY, LIMITED.

1909.

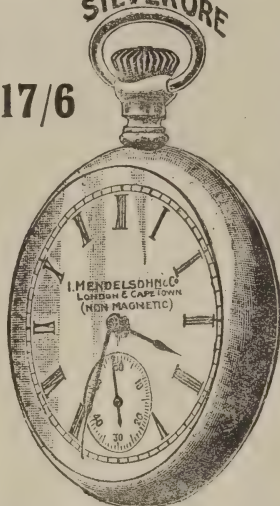
ADVERTISEMENTS.

# **MENDELSONN'S FAMOUS FARMERS' LEVER**

**Watch for ROUGH WORK.**

**SILVERORE**

**17/6**



**25 Years' Written Guarantee.**

Dust and Damp Proof. Screw Case.  
AS ILLUSTRATED. (IN TWO SIZES).

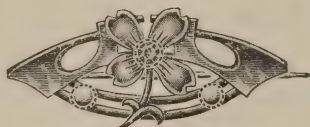
**Silveroid - - 17 6**  
**Sterling Silver 42/-**

POST FREE  
TO ANY  
ADDRESS.

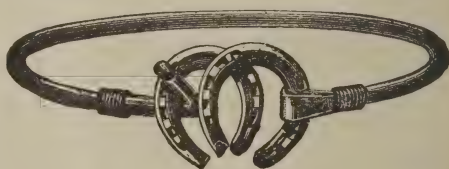
MENDELSONN'S, to prove the **QUALITY** and **VALUE** of this Watch, will send you one on **30 DAYS' FREE TRIAL**. Write for Magnificent **ILLUSTRATED CATALOGUE OF WATCHES and JEWELLERY**, sent Post Free. It costs you nothing and will **SAVE YOU POUNDS**.

**Special Notice.**—This Watch is the best on the Market. A watch similar to those advertised at 20s. can be had from MENDELSONN'S at **12s. 6d. Post Free.**

**Mendelsohn's** are the Largest and CHEAPEST House in Africa for **JEWELLERY, WATCHES, ELECTRO-PLATEWARE & SILVERWARE.**



H 30, 9-ct. Gold Brooch, Set Gems,  
**10s. 6d.**



H 31, 9-ct. Gold Bracelet,  
**21s.**

**MENDELSONN'S** send all Jewellery and Watches Post Free and Duty Free to any Address in British South Africa.



H 37, 18-ct. Gold, set Diamonds and Gems,  
**£5 10s.** and **£6 10s.**



H 33, 18-ct. Gold, set 6 pearls and 1 Gem,  
**25s.**



H 34, 18-ct. Gold, set 16 Diamonds and 1 Gem, **£5 10s.** and **£6 10s.**



H 35, 18-ct. Gold, set 5 Diamonds, **£20, £30, £40.** Smaller, **£5, £7 10s. £10, £15.**

**I. MENDELSONN & CO.,** Jewellers & Watch Manufacturers.

**73, Burg Street, CAPE TOWN,**

(2 Doors from Central Fire Station).



# CONTENTS.

---

|                                                                                                                                                                                                                                                                                                                                     | PAGE |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| "AGRICULTURAL JOURNAL": Volume Twelve ... ..                                                                                                                                                                                                                                                                                        | 4    |
| AGRICULTURAL RESEARCH: Twenty Years' Work in Vermont, U.S.A., II. ...                                                                                                                                                                                                                                                               | 38   |
| AGRICULTURAL UNION, INTER-COLONIAL ... ..                                                                                                                                                                                                                                                                                           | 33   |
| APPLES, EXPORT OF: American and Australian Methods... ..                                                                                                                                                                                                                                                                            | 64   |
| AUTOMOBILE HOE, THE ... ..                                                                                                                                                                                                                                                                                                          | 30   |
| BARK, RUBBER <i>versus</i> : A New Process for Tanning Leather ... ..                                                                                                                                                                                                                                                               | 62   |
| BRANDING, STOCK, IN SOUTH AFRICA: Plea for a Uniform System ...                                                                                                                                                                                                                                                                     | 67   |
| BUTTER, TAINTS IN ... ..                                                                                                                                                                                                                                                                                                            | 53   |
| CANE-CUTTING MACHINE, A NEW ... ..                                                                                                                                                                                                                                                                                                  | 13   |
| CARBON BISULPHIDE: Its Nature and Uses ... ..                                                                                                                                                                                                                                                                                       | 80   |
| "CHOU MOELLIER" ... ..                                                                                                                                                                                                                                                                                                              | 8    |
| CO-OPERATION, AGRICULTURAL, IN GERMANY: Progress during recent years ...                                                                                                                                                                                                                                                            | 44   |
| <b>CORRESPONDENCE:</b>                                                                                                                                                                                                                                                                                                              |      |
| The Eland as a Farm Animal: G. L. Coventry. "Vaporite" for Mealie<br>Grub: Willie Nicholson. Nottingham Road Horse Fair: William<br>Wood. Molasses for Horses: R. A. Ebstein. A Weekly Agricultural<br>Paper for Natal: "A Farmer." Caustic Soda and Sulphur Dip:<br>J. H. Moore. Aloe Cultivation in Natal: Manning & Collison ... | 111  |
| CROPS OF GREAT BRITAIN, ROOT ... ..                                                                                                                                                                                                                                                                                                 | 7    |
| DAIRY INDUSTRY IN QUEENSLAND ... ..                                                                                                                                                                                                                                                                                                 | 50   |
| <b>DEPARTMENTAL NOTICES:</b>                                                                                                                                                                                                                                                                                                        |      |
| Abattoirs and Cold Stores ... ..                                                                                                                                                                                                                                                                                                    | 124  |
| Coal and Labour Returns ... ..                                                                                                                                                                                                                                                                                                      | 117  |
| Diamond Drilling ... ..                                                                                                                                                                                                                                                                                                             | 123  |
| E.C.F. Advisory Committees ... ..                                                                                                                                                                                                                                                                                                   | 125  |
| E.C.F. Brands for Infected Divisions ... ..                                                                                                                                                                                                                                                                                         | 119  |
| Employment Bureau ... ..                                                                                                                                                                                                                                                                                                            | 123  |
| Experiment Station Notices ... ..                                                                                                                                                                                                                                                                                                   | 133  |
| Laboratory, Government: Scale of Charges ... ..                                                                                                                                                                                                                                                                                     | 122  |
| Lungsickness and Scab, Farms under Licence for ... ..                                                                                                                                                                                                                                                                               | 118  |
| Publications Issued by the Department ... ..                                                                                                                                                                                                                                                                                        | 135  |
| EAST COAST FEVER, POSITION OF ... ..                                                                                                                                                                                                                                                                                                | 91   |

# CONTENTS—continued.

|                                                                            | PAGE |
|----------------------------------------------------------------------------|------|
| EAST COAST FEVER REGULATIONS, RECENT ... ..                                | 8    |
| ELAND, DOMESTICATING THE ... ..                                            | 9    |
| ENTOMOLOGIST'S OFFICE : Notes of the Month ... ..                          | 76   |
| EXCHANGE REVIEWS ... ..                                                    | 102  |
| FARM APPRENTICES' BUREAU ... ..                                            | 11   |
| FARMERS, AMONG THE : The Associations during the Month ... ..              | 97   |
| FARMERS' ASSOCIATIONS, EXECUTIVES OF ... ..                                | 128  |
| FISHING RESTRICTIONS ... ..                                                | 10   |
| FORESTS, CROWN : Conservation Reports ... ..                               | 92   |
| GOATS, ANGORA ; EXPORT OF ... ..                                           | 9    |
| HAY, WEIGHT OF ; ESTIMATING ... ..                                         | 24   |
| HOE, AUTOMOBILE ; THE ... ..                                               | 30   |
| HORSE FAIRS, NOTTINGHAM ROAD ... ..                                        | 10   |
| HORSESICKNESS : Progress Report by Mr. H. Watkins-Pitchford ... ..         | 25   |
| KERNEL TO CRIB, FROM : A Chat about Mealies and Mealie Cultivation ... ..  | 17   |
| LAMBS FOR EXPORT ... ..                                                    | 14   |
| LUCERNE, THICKENING UP A THIN STAND OF ... ..                              | 43   |
| LUNGSICKNESS... ..                                                         | 16   |
| MAIZE AND MAIZE CULTIVATION, A CHAT ABOUT ... ..                           | 17   |
| MAIZE CROP, THE ... ..                                                     | 1    |
| MAIZE STALKS, PAPER FROM ... ..                                            | 31   |
| MEAT INDUSTRY IN HUNGARY, THE. By Loudon M. Douglas ... ..                 | 46   |
| MEAT SUPPLY, THE CONTROL OF THE : Lecture by Prof. Loudon M. Douglas... .. | 60   |
| METEOROLOGICAL RETURNS ... ..                                              | 120  |
| MULE BREEDING ... ..                                                       | 12   |
| NAARTJES OR MANDARINES ? ... ..                                            | 85   |
| NOTES AND COMMENTS ... ..                                                  | 6    |
| ORCHARDS OF NOVA SCOTIA, A YEAR AMONG THE. By Cecil H. Hooper ... ..       | 54   |
| PAPER FROM MAIZE STALKS ... ..                                             | 31   |
| PINEAPPLE EXPORT ... ..                                                    | 87   |
| POUND NOTICES ... ..                                                       | 121  |
| RUBBER <i>versus</i> BARK : A New Process for Tanning Leather ... ..       | 62   |
| SCIENCE AND THE FARMER : Notes of Interest by Farming Experts ... ..       | 108  |
| SHEEP : Oxfords, Leicesters and Southdowns ... ..                          | 9    |
| SPARROW, ENGLISH ; THE. By Claude Fuller ... ..                            | 76   |
| SUGAR CANE CULTIVATION : The System Recommended for Cuba ... ..            | 28   |
| SUGAR CANE, STRIPPING : Is it advisable? ... ..                            | 51   |
| TICK PARASITE ... ..                                                       | 107  |
| TILLAGE, VALUE OF ... ..                                                   | 6    |
| 'WATER FINDING,' SCIENTIFIC ... ..                                         | 11   |
| WAX EXTRACTOR, HOW TO MAKE A ... ..                                        | 71   |
| WAX MOULDING ... ..                                                        | 96   |
| WOOL TRADE IN 1908 ... ..                                                  | 72   |

---

\* \* \* "The Markets and Crops," issued as a supplement with each number of the JOURNAL, contains full information regarding South African and oversea markets and crop conditions, and Commercial Intelligence Bureau announcements.





AN AUSTRALIAN SHROPSHIRE.



**The Natal Agricultural Journal.**

***The Maize Crop.***

---

NOVEMBER and December saw the planting of the main maize crop of the 1908-9 season; and now the crop is well up and looking fairly healthy. Small areas were, as usual, planted as early as August and September, but the main sowings have as a rule been made at a much later date than ordinarily, in order to escape as far as possible the ravages of the mealie grub. This late sowing is a factor which must be borne in mind when considering the prospects of the crop, since it lessens to a very great extent the possibility of a reduction of the crop from this cause, and it may be found almost to eliminate this adverse factor altogether.

In accordance with our custom, we propose to keep our readers advised as to the state of the crop; and this year we have reorganised to a considerable degree the system of crop-forecasting upon which we have worked hitherto, in order to reduce the chances of error to the smallest degree possible and also to give our readers a *monthly* revision of our first estimate. Last year a misunderstanding took place owing to many merchants having taken our first estimate as a final one and either overlooking or not considering the revised estimates which we published later in these pages. We shall publish a report on the state of the crop every month, and in each report we will revise the previous month's estimate where necessary.

We are enabled to prepare these estimates through the good offices of a number of prominent farmers whom we have approached and who have very kindly agreed to supply us with a report at the beginning of each month, on forms supplied by us, upon the state of the crop on the

last day of the month just ended. We wrote to a large number of farmers, but under 50 per cent. of them have agreed to help us; of the rest about ten per cent. have written to say that they would not be able, for various reasons, to help, while of the remainder we have up to the time of writing heard nothing. We trust that those who have not yet sent in reports, and who can possibly do so, will post the January and following schedules on the dates specified thereon, as the more reports we have the more reliable, naturally, must be our estimate.

From the reports we have received we find that the average increase for the whole Colony in the area of mealies planted this season is 16·2 per cent. The area cropped last season was approximately 143,000 acres, so that the total area under maize at the present time is in the vicinity of 166,000 acres. We give below, for the purposes of comparison, the areas for each of the five years 1904—1908, together with the estimate for 1909:—

|                             |                       |
|-----------------------------|-----------------------|
| 1909 .. . . . . . . . . . . | 166,000 (Estimate)    |
| 1908 .. . . . . . . . . . . | 143,000 (Approximate) |
| 1907 .. . . . . . . . . . . | 117,750               |
| 1906 .. . . . . . . . . . . | 112,486               |
| 1905 .. . . . . . . . . . . | 134,612               |
| 1904 .. . . . . . . . . . . | 131,190               |

In making this estimate we have carefully weighted the estimates sent in by our correspondents, according to the importance, from a mealie-growing point of view, of each Magisterial Division; and we have followed the same procedure in fixing the probable yield per acre. The yield per acre we have calculated upon the reports as to the condition of the crop on the 31st December, so that it must be remembered that what we have to state here does not refer to the condition of the crop at the time of writing but at the end of last month. According to our reports, then, we calculate that the prospects on the 31st December were for a crop giving an average of 4·7 muids to the acre for the whole Colony. Multiplying the estimated acreage by this figure we get a probable crop of 780,200, or, say, 780,000 muids.

So much for the statistical side. We may now proceed to examine the reports themselves upon which these calculations are based. We asked our correspondents to state, in their December report, (*a*) what the increase or decrease—as the case might be—in the area of land planted with mealies this season as compared with last was in their district, and (*b*) what the condition of the crop was on the 31st December, using the words “Poor,” “Fair,” “Average” or “Above the Average,” to describe it. In averaging up these reports we have used the figures 1, 2, 3, and 4, to represent the conditions “Poor,” “Fair,” “Average,” and “Above the Average,” respectively; and we have thus got the

following results which we publish here as they will probably be of general interest. We may first explain our method a little more clearly, however, taking as an example the condition of the crop in the Lower Umzimkulu Division—2·7. The figure “2,” it will be remembered, represents the condition described as “Fair,” whilst “3” represents “Average” condition. Thus 2·7 will represent an *average* condition of from “Fair” to “Average,” but a little nearer “Average” than “Fair.” This does not mean, of course, that all the crops in that Division may be described as 2·7 in condition. In fact, it may easily be that not a single field is of such condition. The meaning is that, taking the crops as a *whole*, their condition is something a little more than midway between “fair” and “average.”

Our results, given for Magisterial Divisions, are as follows:—Lower Umzimkulu, 2·7; Alexandra, 2·5; Umlazi, 3; Inanda and Indwedwe, 3; Lower Tugela and Mapumulo, 2; Impendhle, 3; Alfred, 3; Ixopo, 2·4; Richmond, 2·5; Umgeni, 3; New Hanover, 2; Lion’s River, 3; Umvoti, 3·7; Krantzkop, 3; Underberg, 4; Polela, 3; Bergville, 3; Estcourt, 2·7; Weenen, 3; Klip River, 2·8; Umsinga, 2; Dundee, 2; Newcastle, 3; Vryheid, 2·5; Babanango, 1·7; Eshowe and Mtunzini, 3; Emtonjaneni, 2; Nkandhla and Nqutu, 2.

Weighting these averages in the way we have indicated, we find that the average condition of the mealie crop of the Colony on the 31st December was 2·7, or between “fair” and “average.” In estimating the yield per acre, we have taken the actual average yield for the whole Colony for the past five years—1904-1908—which works out at 5·16 muids per acre. This we should have taken as the probable yield of the present season’s crop had our reports as to condition worked out at “Average,” or 3. As it happens, however, they have come out at 2·7, which, by proportion, gives us an average yield of 4·7 muids.

As we have said before, these results—except, of course, as regards acreage—hold good only until the appearance of our next issue, when they will be revised in the light of later reports.

In this article we refer only to crops by European farmers. We have received no reports regarding natives’ crops, save in a few isolated cases; but if we are in a position to collect information before harvesting takes place we will do so, as the extent of the natives’ crops must always, as we have on several occasions previously pointed out, have an important influence upon the export trade. Failure of the natives’ crops means so much of the European crop withdrawn from the possibility of export oversea, since the natives are large purchasers from the European farmers; and it is necessary for us to have some idea as to the extent to which the natives will be purchasers in order that stocks may be held in the country sufficient for the Colony’s requirements until the new crop comes on to the market.

## **Volume Twelve.**

---

WITH this issue we open a new volume—Volume XII.—of the *Journal*. In the past our policy has always been to endeavour to increase the attractiveness and usefulness of the *Journal*—and how far we have succeeded in this direction it is for our readers to say;—and in the future we shall at all times continue to carry out that policy, so far as our resources will allow. With this issue we introduce several fresh features into the *Journal*—the first of a number which we contemplate introducing this year. The first of these, which will have already struck the reader, is our “MARKET SUPPLEMENT.” Our reasons for thus printing our market news separately from the *Journal* itself are several, but the most important is that we shall thereby be in a position to present our readers with market information of a much later date than we have hitherto found it possible to do. Readers will readily understand that with a journal of the size of the *Natal Agricultural Journal* some time must elapse between the handing to the printers of the last batch of “copy” and the delivery of the bound and cut journal to the reader, so that market news which is printed in the *Journal* itself must necessarily be somewhat out of date by the time it reaches the reader’s hands. By the arrangements we have made, however, we shall now be able to let our readers have the latest *available* information. We have put “available” in italics: it often happens that reports from markets outside of Natal miscarry or are not posted in time, and the information which we are compelled to print is not the latest we might have had, although it is the latest *available*. In the MARKET SUPPLEMENT we shall print all news relating to the markets, both South African and oversea, as well as sundry information, statistical and otherwise, relating to crops in this country and elsewhere, in order that it may be as useful a publication as possible for the farmer, the merchant, or the buyer of farm produce, who wishes to be kept informed as to the state of the markets. We shall at all times welcome any suggestions from our readers for the improvement of the SUPPLEMENT, as no one recognises more fully than we do the necessity to the farmer of up-to-date, reliable, and comprehensive information relating to the markets, upon which he is dependent for the sale of his produce.

In our last issue we announced the inauguration of the COMMERCIAL INTELLIGENCE BUREAU, which has been instituted under the charge of the Editor of the *Natal Agricultural Journal* by direction of the Minister of Agriculture. As this Bureau has for its chief object the marketing of goods, we intend publishing all notices and announcements



in connection with it, in the MARKET SUPPLEMENT; and we strongly advise readers to keep an eye on all Bureau notices as they appear each month.

Another feature which we have introduced with this issue is three pages of short paragraphs of interest to farmers by recognised experts in agriculture and the allied sciences, which will appear monthly under the heading of "SCIENCE AND THE FARMER." In selecting these paragraphs we have paid due regard to simplicity and pithiness of expression; and we think that farmers will find much of value in these notes.

Still another feature which is inaugurated with the present issue is a statement showing the position of East Coast Fever, compiled under the direction of the Chief of the Veterinary Division (Mr. W. M. Power). A similar statement will appear in each issue in future, showing the locality of the outbreaks of the disease which have occurred during the previous month, and we venture to think our readers will appreciate this innovation.

A further new feature, to which we give more extended reference in our "Notes and Comments" in this issue, is the establishment of a FARM APPRENTICES' BUREAU, which has for its object the drafting of boys from the towns to the farms to serve as apprentices to farmers, learn farming, and thus qualify themselves to take up land in the Colony later on if they so wish. Many farmers would be glad to have European boys on their farms; and accordingly we are opening a register of boys who desire to get on to farms and of farmers who would be willing to take boys. A list of applicants (numbered) will appear in each issue. We refer readers to the more extended reference to this matter which will be found under "Notes and Comments."

These are just a few of the new features which we contemplate introducing during the present year. Our older features remain: the "Exchange Reviews," the object of which is to keep farmers informed as to what is going on in the agricultural world, except such matters are specially referred to elsewhere in the *Journal*; the "Among the Farmers" section, devoted to the monthly doings of the various agricultural societies and farmers' associations; the monthly article on the agricultural conditions prevailing in the Colony; and the various older features of the *Journal*.

We shall endeavour always to enhance in all ways the value of the *Journal* to the farmer and to increase its attractiveness; and we shall at all times be glad to receive and consider suggestions for its improvement. We may here add that we are always pleased to have articles from practical farmers; we have published several during the past year, and we have been promised further ones at an early date. We hope that others also of our readers will be able to help us during the coming year, as such articles add greatly to the practical value of the *Journal*.



### ***The Value of Tillage.***

Some interesting cultivation experiments have been carried out during the last two years at the Robertson Experiment Station, Cape Colony, with oats, barley, and wheat. Surprising results have been obtained: in fact the increases gained from additional cultivation were so remarkable the first season that it was thought that perhaps the cause might be in the land itself, so the plots were reversed this last season, and those that gave the heaviest returns the previous season, instead of being thoroughly worked and reduced to the best mechanical condition possible, only received the usual cultivation, and, true to the previous year's experiment, gave the smallest yield, whereas those that gave the small yields last season under the usual methods of cultivation have this season given the maximum returns under increased cultivation. This proves conclusively that the increase was not due to difference in the soil of the various plots, but to the increased cultivation.

Mr. R. W. Thornton, the Government Agriculturist, gives the results and conclusions drawn therefrom—of the experiments in a brief article in the *Cape Agricultural Journal* for January. Last season the experiment was carried out on the following lines:—The land was uniformly dressed with a complete fertiliser. Each plot received the same quantity of water, including rainfall. After ploughing a cultivator was run over the land, and the seed (oats) sown with the Superior Seed Drill, and the experimental area was then finally rolled. Each successive plot, however, received one more ploughing than the previous one, and the yields are in steadily ascending order. The cost of each ploughing after the first is taken at 6s. per acre and the forage at 2s. 6d. per hundred pounds. The results were as follow:—*Plot No. 1*, receiving one ploughing, yielded 750 lbs. of oathay per acre. *Plot No. 2*, receiving two ploughings, yielded 1,000 lbs. of oathay per acre; the value of the extra oathay obtained (250 lbs.) was 6s. 3d.; the cost of the additional ploughing was 6s.; so that the clear profit over one ploughing was 3d. *Plot No. 3* received three

ploughings; it yielded 1,880 lbs., or 1,130 lbs. more than Plot No. 1, the excess being worth 28s. 3d.; the cost of the extra ploughing was 12s.; so that in this case a clear profit was obtained of 16s. 3d. over the results of one ploughing. *Plot No. 4*, receiving four ploughings, yielded 3,800 lbs. of oathay per acre, this was 3,050 lbs. more than that obtained from Plot No. 1, the additional oathay being valued at 76s. 3d.; the cost of the additional ploughing was 18s., so that a clear profit of 58s. 3d. was obtained. Equally striking results were obtained from the barley and wheat plots planted during the past year. In these experiments, however, the plots were each ploughed and harrowed once only but were cultivated each once more than the previous one.

-----

The results of these experiments emphasise the importance of careful tillage, and show that, although manuring is highly important, yields can be still further and profitably increased by extra ploughing or cultivating. In India, where the peasants often find it difficult to obtain fertilisers and labour is cheap, they depend largely on obtaining good crops by increased cultivation, and will frequently plough their land four or five times. Four ploughings appear to be the most tried at the Robertson Experiment Farm, and it is probable that ploughing much more frequently than this would not have any better effect than four or five times ploughing.

-----

### **Root Crops in Great Britain.**

We have received from the British Board of Agriculture and Fisheries a copy of a preliminary statement which they have issued showing the estimated total produce and yield per acre of the potato and root crops in Great Britain in the year 1908, with comparisons for 1907, and the average yield per acre of the ten years 1898-1907. The potato crop of 1908 amounted to 3,919,798 tons, as compared with 2,977,485 tons in 1907; and the average yield per acre during these two years was 6.97 tons and 5.42 tons respectively. Of turnips and swedes, 23,738,207 tons were produced last year, which again is an increase over the quantity produced in 1907—22,085,718 tons. The yield was 15.31 tons per acre in 1908, as compared with 14.13 tons in 1907. Mangolds also show an increase—8,987,161 tons in 1908, and 8,936,922 tons in 1907;—and the yield per acre as well was above that of the previous season: 21.01 tons in 1908 and 19.86 tons in 1907. The season appears to have been a good one for all root crops, as in each case the average yield per acre is above the average of 1907 and considerably higher than the average of the ten years 1898—1907. The acreage of potatoes was greater in 1908 than in 1907, but in the cases of turnips and swedes, and mangolds, the area was lower than that of the previous season, although heavier crops were obtained.



**“Chou Moellier.”**

We referred in our last issue to a new fodder plant—“Chou Moellier”—which is coming to notice in Victoria, and we have now received an enquiry from a reader asking for some seed if any is available. If any of our readers should happen to know whether seed is obtainable in Natal, and where, we would be glad if they would communicate with us. In the meantime we are writing to the Victorian Department of Agriculture on the subject and asking to be given the names of any seedsmen in Melbourne or elsewhere from whom seed of this fodder plant might be obtained.

---

**Recent E.G.F. Regulations.**

The Minister of Agriculture has prohibited, by Government Notice No. 735, 1908, the removal of hides, horns, hoofs, hair, and heads of cattle, cut grass, manure, litter from places where cattle are kept, lucerne or any other fodder, from, into, or within any infected area, except upon permit obtained from the Advisory Committee or Committees concerned. Permits for the removal of hides, horns, hoofs, hair, and heads of cattle, cut grass, manure, litter from places where cattle are kept, lucerne or any other fodder by rail from any railway station must be obtained from the Minister of Agriculture, and will be issued subject to such conditions as he may see fit to impose.

---

With reference to the Order of the Minister of Agriculture, published under Government Notice No. 671 of 1908, prohibiting the acquisition of cattle by purchase or otherwise without a permit from the Minister, a further Government Notice (No. 722, 1908), notifies that the Order shall be limited to the purchase of cattle for slaughter or to their purchase or acquisition otherwise in the course of trade. “It must be understood,” the Notice concludes, “by persons acquiring cattle for other purposes that the present Notice in no way exempts them from the obligation of obtaining permits for the removal of any cattle which they may acquire.”

---

By Government Notice No. 734, 1908, the Minister of Agriculture has declared that the farms “The Oaks,” “The Elms,” “Glastonbury,” and “Snipemarsh,” in the Klip River Division, shall, for the purpose of the East Coast Fever Acts, be deemed to be a portion of the Magisterial Division of Newcastle, and all restrictions or regulations which now or hereafter may be in force in the Magisterial Division of Newcastle will, in like manner, be in force as regards the said farms. Another Notice (No. 29, 1909) cancels Government Notice No. 670, 1908, by which the Minister ordered that all cattle in Sub-division No. 2 of the Magisterial Division of Estcourt should be branded with the District brand.



---

***Oxfords, Leicesters and Southdowns.***

A correspondent writes asking to be supplied with the names and addresses of sheep breeders in Natal breeding Oxfords, Leicesters and Southdowns. We shall be glad if readers who may be breeders of these sheep will kindly communicate with us.

---

***Export of Angora Goats.***

Legislation having been enacted in the Territories of Swaziland, Basutoland, and the Bechuanaland Protectorate, prohibiting, under penalties equal to the penalties imposed under Act No. 29, 1908, the exportation of Angora rams and ewes, the exportation of rams and ewes from Natal to those territories is henceforth permitted. Readers will doubtless remember that, under Act No. 29 of 1908, the export of Angora goats is prohibited, under penalty, except to such States and Territories in South Africa as have passed similar legislation imposing a like penalty.

---

***Domesticating the Eland.***

In connection with our note in the November issue of the *Journal* on the domestication of the eland for use on farms, we have received some interesting particulars regarding the capture and domestication of the young animals by the Forester in charge of the Giant's Castle Game Reserve (Mr. R. E. Symons). During the past few months the Department of Agriculture has been experimenting in connection with the capture of eland calves, with a view to demonstrating to what extent the domestication of these animals is possible; and during the months of August and September, 1908, the capture of 18 calves and 3 yearlings at the Game Reserve was effected for this purpose.

---

The method of capture adopted by the Forester in charge of the Reserve was to pursue the cow and young on horseback, eventually separating them and riding down the young until exhausted. The chase, before capture is effected, extends sometimes from eight to ten miles. The young elands, when caught, are strapped on the front of the saddle, and in this manner are conveyed to the homestead at the Reserve. It is necessary in some cases during the ride after capture to release the calves several times in order to rub their legs, which become thin and the circulation impeded, owing to the method of transport from place of capture to destination. It can easily be understood that good horses as well as good riders are required to carry out this operation effectively. Experience teaches that it is inadvisable to capture yearlings, as they usually die from the effects of confinement. One was kept alive for two or three weeks, but the other yearlings died. The calves are very docile and become tame in a few days; they never sulk, and take readily to their food

(usually diluted milk as a start), and quickly become accustomed to a calf feeder. Gallsickness would appear to be a disease to which these animals are subject. Bad luck was experienced with the calves in this connection, and three succumbed to the disease. On removal from the Reserve to Cedara no trouble was experienced in driving the calves from place to place. A certain demand for these animals appears to exist, the Director of Agriculture and Forestry having received several orders for young calves.

---

### ***Fishing Restrictions.***

Under the provisions of Law 27, 1890, fishing has been prohibited from the 15th January, 1909, until the 31st December, 1910, in that portion of the Umtamvuna River between the Falls and the junction of the tributary stream Ludeka, and in the following tributary streams from their source to their junction with the Umtamvuna River, *viz*: The Upata, the Lidabeka, the Liweza, and the Mwaca. This restriction has been made on account of the fact that trout have recently been introduced into the Umtamvuna.

---

Orders have been issued, also, affecting Coast fisheries. One of these Orders ordains that, during the period from the 1st January to the 31st December, 1909, it shall be unlawful to capture or attempt to capture by any means whatever shrimps, prawns, crabs, or crayfish in any canal, river or stream opening or running into the Bay of Natal. The other Order declares a further close season for mussels in Colonial waters between the Tugela and Umtamvuna Rivers.

---

### ***Nottingham Road Horse Fairs.***

In our Correspondence pages in this issue will be found a letter from Mr. William Wood, who writes on behalf of the Horse Fair Sub-Committee of the Nottingham Road Farmers' Association, regarding the horse fair held at Nottingham Road in November. This letter was received too late for insertion in our December issue, and so appears somewhat belated. It will, however, serve its purpose, which is to draw the attention of farmers to the horse fairs which the Nottingham Road Association, with very commendable enterprise, proposes to hold every six months. Mr. Wood's report of the first of these fairs shows excellent results and gives promise of some very successful fairs in the future. At the sale, as will be seen, hacks realised up to 30 guineas, carriage pairs in harness up to 59 guineas, draught pairs in harness up to 50 guineas, and entries up to 30 guineas; and altogether horses to the value of £1,200 changed hands. These results are encouraging and promise well for the future. The idea of holding these fairs is a very good one, and we hope it will receive the practical support it deserves.

### ***A Farm Apprentices' Bureau.***

By direction of the Minister of Agriculture (the Hon. W. A. Deane) we are now organising a "Farm Apprentices' Bureau" for the purpose of putting European boys in the towns in touch with farmers who are willing to take apprentices on their farms. Mr. Deane has been struck by the number of boys in Maritzburg and Durban who appear to be "unemployed" and who are to be seen wandering aimlessly about the streets. These lads he considers would be well employed on farms, since there are doubtless many farmers who would be willing to take such boys as apprentices. We are accordingly opening lists of (a) boys desirous of serving an apprenticeship, and (b) farmers who would be prepared to take boys as apprentices. We hope to reach the boys through the columns of the daily press; and in the meantime we shall be glad to receive the names and addresses of farmers who can give employment to youths. Farmers should state (a) age of boy desired, and (b) terms of employment. All communications should be addressed to the Editor of the *Natal Agricultural Journal*, Maritzburg.

### ***Scientific "Water Finding."***

New inventions are so frequent that we are commencing to regard them almost with indifference—or at least with very little interest. What was once regarded as marvellous is now commonplace, and present-day inventions have little effect upon the modern mind satiated with "novelties" and "wonders." But we are still able to feel wonder at a particularly "marvellous" invention or contrivance, and we realised this on looking through a prospectus which we have lately received of a "Patent Automatic Water Finder." We are all acquainted with, or have heard of, the mystic "dowser" with his prong, who claims to be able to detect the existence of subterranean waters and sometimes to indicate the approximate depth at which the water will be found. But our friend is destined soon to be relegated to a place among the sometime wonders of a past age, if the prospectus before us is not too optimistic. The Finder, we read, "is a simple apparatus by which any unskilled person may readily ascertain whether a subterranean spring of pure water exists under a spot where boring operations are desired," for it "indicates the presence of subterranean flowing springs at depths up to 1,000 feet." Such an instrument should prove a great boon to farmers in South Africa, and it will accordingly be of interest to note the claims made for it

The principle on which the instrument works, we learn, is the measuring of the strength of the electrical currents which are constantly flowing between earth and atmosphere, and which are always strongest in the vicinity of subterranean water courses, the flowing



waters of which are charged with electricity to a certain degree. "Should a subterranean spring be present under where the instrument has been fixed, the needle commences to move; note being carefully taken of the number of degrees on the scale, and the position of the instrument changed from time to time, the spot where the greatest movement of the needle has been obtained is that where the well boring should be made. If the needle remains stationary, it may be taken for granted that a subterranean spring does not exist under the spot where the instrument is fixed. . . . Observations should always be taken between 8 and 12 in the morning and 2 and 5 in the afternoon, these being the hours of greatest activity of the vertical air currents. A fine, calm, clear day should be selected, as the instrument does not work so well when earth and atmosphere are saturated with moisture. The instrument does not work under trees or in the immediate vicinity of iron structures. The instrument indicates water courses flowing underground in a natural state, and not water pipes or courses that have sprung up to day-light."

---

The instrument is stated to have been thoroughly investigated by leading scientists and engineers, who have given their professional opinions and vouch for the successful application of the invention. The instruments are made by Messrs. W. Mansfield & Co., of Liverpool, in two sizes, the £100 one for locating subterranean streams at depths up to 1,000 feet, and the £50 one at depths up to 500 feet. These prices include packing and delivery f.o.b. steamer, London or Liverpool. The instrument will appeal to those who are interested in "Water Finding," and who can appreciate the importance of having the knowledge before commencing costly boring operations, whether a good spring of water will be found or not within reasonable limits.

---

### ***Mule Breeding.***

The spread of East Coast Fever, with the accompanying restrictions upon transport, has turned men's minds to the mule, the donkey, and the horse as draught animals, and wagons drawn by spans of mules or donkeys are the rule rather than the exception as they used to be in the old days. The continuance of East Coast Fever is, therefore, likely to render mule-breeding a profitable business for any enterprising farmer who cares to undertake it on a large scale; and at the same time there are doubtless numbers of other farmers who may feel disposed to breed mules at a side-line, dispose of the animals they do not want when the market happens to need them and use the others on their own farms.

---

Mr. Alex. Crawford read an interesting paper on Mule-Breeding at the recent Agricultural Conference of West Australia, in which he gives



some useful facts that farmers thinking of going in for mule-breeding in this country should find of value. The finest jackass, he remarks, is in Spain, where there are many varieties of asses; and the most prolific province is Catalonia. "The Catalonian," he continues, "does not possess the size, but has quality, spirit, and style. Next comes the Poiteau donkey. He is larger, and rough-coated, of inferior spirit, and not such a good mule-getter. To breed males commercially the essential is a good donkey sire. The United States possesses from 6,000 to 7,000 donkeys, entered in the Stud Book; they are worth from £30 or £40 up to 400 or 500 guineas apiece. Everything depends on the size of the jack. A jack from 12 to 13 hands is worth £20 to £30, of 16 hands up to 400 or 500 guineas. But for ordinary purposes, for heavy draught work, the jack should be 15·2 to 16 hands. For lighter saddle and harness work jacks may be anything from 14 to 15·2 hands.

"The main qualities to look for in a jack are size, bone, and weight. The frame should be high and compact. A light-framed and light-boned jack will beget an inferior mule. The weight should not be less than 1,100 lbs. for draught purposes. In buying a jack for breeding purposes a guarantee should be obtained that he will cover mares, as many people here have introduced jacks at heavy cost to afterwards find they would not cover mares at all. Jacks permitted to cover female donkeys have often refused to have anything to do with mares. In one case a jack costing £350 was imported to South Australia eight or nine years ago, but begat no mules. It is useless to put a high-class jack to an inferior mare, as so much depends on her. In countries where mules are bred largely the best mares are sold for mating, and the finest mules are from mares that have a large proportion of the Persian Pecheran breed. To all intents and purposes they resemble the Suffolk in everything except colour. The finest mules bred in America and Europe are generally from well-bred mares of this stamp. It is not unusual there to see mules 16 to 17 hands high worth £80 to £100. Well-bred mares should be used for buggy and riding work."

### **A New Cane-Cutting Machine.**

For several years inventors have been at work with the object of producing a machine which will not only cut, but also top, the sugarcane. None have hitherto been successful. Whatever machine has been, or may be, invented for the purpose, it is certain that none will ever work satisfactorily on rough stony land, where, in many cases, the finest cane is grown. According to the *Queensland Agricultural Journal* another inventor has entered the field—Mr. W. J. Howcroft, of South Brisbane, who has invented a machine in which, he claims, he has overcome all the difficulties which previous inventors have been unable

to cope with. We learn that the invention, which is at present financed by a local syndicate, has been patented in all sugar-growing countries, as well as in Great Britain.

---

Mr. Howcroft supplies the following information regarding his invention:—Like an ordinary harvester, the machine runs outside the cane, and the motor power sets in action a series of blades, which are aptly termed “feelers” or “fingers,” which, when not in use, can be raised to a height of 18 in. above the ground. When working, these “fingers” are lowered, and seize the cane in the same manner as would be done by a man when cutting. Beneath them are cutting knives, rotating on a lever at high speed—some 400 revolutions per minute. These are so arranged that they can cut the cane an inch or more below the surface of the ground, a most important point, as all sugar-growers know. As soon as the canes are cut, they pass on a movable platform to a man who watches till the canes reach the point at which they would be topped by the human cane-cutter. Then the topping knives, which revolve at the same speed as the cutters, top each cane at the right point, after which they are delivered on the ground by means of a trough. The tops themselves are passed out separately. The machine is worked by means of two small oil motors.

---

Should this machine fulfil its inventor’s expectations, the cost of cane-cutting will be so reduced—amounting, it is claimed, to a saving of five-sixths of the present cost—that cane-growers will, as the *Queensland Agricultural Journal* points out, reap an enormous benefit. The machine is expected to cut 150 tons of cane a day, which would mean that a 30-ton crop on 50 acres would be harvested in 10 days. The rapid work, if it be accomplished, will be of incalculable benefit to growers and mill-owners where cane has been heavily frosted, as occurred this year. Thousands of tons of cane could have been saved which became either a partial or total loss, owing to the impossibility of getting the frosted cane off in time, seeing that, at the most, smart cane-cutters can only cut about 3 tons a day, even when working—as many cutters do—as long as 10 and 12 hours a day. In 1907, 94,384 acres of cane were crushed out of a total area planted of 126,810 acres. The weight of cane crushed was 1,665,028 tons.

---

### **Lambs for Export.**

In connection with the articles in our last issue on the subject of mutton-production, some remarks by Mr. H. W. Ham, Sheep Expert of the West Australian Department of Agriculture, on the causes of rejects of lambs forwarded by farmers for export, are of interest. Farmers in the lamb-raising industry are sometimes disappointed

with the average price paid and the number of rejects made by export buyers each year. Some farmers and buyers too, hold that these rejects will do again for lamb raising. If the rejection is on account of want of condition, owing to the season or bad feeding, it may be so, but if carelessly bred in the first place then they can never possibly be good lamb raisers. "It is only too plain, however," Mr. Ham remarks, "that when our lambs are at their prime and in greatest numbers there are not sufficient works or cool storage to promptly deal with and hold them. Farmers are then told that the lambs are not ready, and have to wait until their lambs are past their best in sappiness and quality. At the same time it has to be admitted that with many farmers the fault lies with the breeding of the lambs more than with the man rejecting them.

---

"Too many farmers," Mr. Ham points out, "breed second quality. Many more spoil their lambs in the feeding. What they term 'stocking up' is responsible for much of this, sometimes in tricky seasons through no fault of the farmer, but mostly in good seasons when the temptation of luxuriant herbage is great. Others give the animals no chance by forcing ewes and lambs to clean out cultivation and fallow paddocks. This condition of things will always exist to a greater or less extent; all have to learn by experience, and for those who believe in what they call 'a little dealing' the danger of being caught is always present. A matter, which up to the present many farmers have not given sufficient thought to, is the secondary result obtained by mating certain breeds and grades of ewes with rams of such a class that the result cannot be satisfactory. Thick-set sappy lambs stand knocking about in trucks and yards with a minimum of damage. Lambs when full of grass may look well in the paddock, but often the dressed carcass shows very little thickness through the fore-quarter. Lambs of this kind quickly lose whatever little bloom they may have had when they left the paddocks. Small merino ewes, especially if the fleece is marked by extreme density and head covering, are best mated to the smaller boned, neater headed and bare pointed Leicesters. The latter should, however, be shapely and well woolled, and not some of the thin locked and wasty fleeced sorts that are too common in the country. This useful breed is at present undergoing a mild boom.

---

"Our best thriving breeds are the Downs and the best fleeced of these are the Shropshires. But when joined with merino ewes, especially the station culls that the farmer too often gets hold of, these lambs are only second rate freezers at best, for merino ewes are not the best of milk givers. They are also the worst of wool cutters if held over, as a lot of them have to be. The Shropshire is only a fair woolled breed, and

these ewes are culled for being either inferior or light woolled. No class of sheep is less profitable than cull merinos, for they are culled for ill shapes as well as for poor fleeces, and this means ill doers and bad milkers. The lambs cannot inherit any useful wool-cutting qualities, and have only the sire to give better constitutional shape, but this is counteracted by the dam being a poor doer, and consequently a poor milker. After all, the ewe has to carry the lamb and then rear it, and as regards freezing lambs, the ewes have more to do with the success of them from start to finish than the ram. One starts it, the other finishes it. Good sorts of well-grown merino ewes should go to thick-set, good-fleeced Lincoln rams. Good sorts of coarse Lincoln-merino ewes should go to good shaped Downs rams for farmers raising export lambs, and to level made plain bodied merino rams for wool-growers. . . . All the natural advantages and best of feed will not make prime quality lambs, unless they are reared from roomy, good shaped ewes and begot by level made rams of a breed suited to correct whatever faults the ewes are inclined to."

---

### **Lungsickness.**

Outbreaks of Lungsickness have occurred lately in the Magisterial Divisions of Estcourt, Bergville, Alfred and Lower Umzimkulu, and repressive measures have been taken in the direction of the declaration of infected areas within the meaning of the Lungsickness Prevention Act of 1897 and the prohibition of the movement of cattle from those areas. Bergville and Estcourt are dealt with by Proclamations Nos. 77 of 1908 and 9 of 1909, respectively. In the former Division the farm "Riet Vallei," and in the latter Division the farms "Calcote" and "Scottsfontein," have been declared infected areas, and the removal of cattle from these farms has been prohibited. The Magisterial Division of Alfred and Lower Umzimkulu were dealt with by Proclamations published on the 29th December, but a further Proclamation has since been issued modifying the restrictions then imposed. Cattle which have been inoculated against Lungsickness to the satisfaction of the Veterinary Officer in charge of the district may now be moved along any main road through any of the infected areas previously defined by the Proclamations in question, provided that the permit for such removal as required by the East Coast Fever regulations is first obtained.

---

Capital is *circulating* or *fixed*. On a farm, food, fuel, and stock are circulating, whilst bridges, roads, fences, and so on, are fixed.



---

## ***From Kernel to Crib.***

---

### A CHAT ABOUT MEALIES AND MEALIE CULTIVATION.

---

ALL over the Colony now are to be seen large fields covered with young, green, graceful-looking mealies. Here the stand is good; there it is poor, but on the whole the young plants look well. Those fields represent an influx of fresh money into the country during 1909 to the extent of between £250,000 and £300,000—possibly more—if we have a good season.

Seventeen per cent. more land has been put under mealies this year as compared with the acreage of last year, and the crop is looking well: this means, with a normal season, a good harvest which will be considerably above that of last season.

Indirectly this shows greatly increased interest in maize cultivation. Farmers are beginning to recognise that there is money in “the miserable mealie”; and they are not only planting more land but they are manuring more and giving more attention to methods of cultivation with a view to increasing their yield per acre. In studying methods of cultivation of maize America has a special interest for us, for the United States are, practically speaking, the home of the mealie, with an annual production of over 800,000,000 muids. Maize is one of the most important crops of that country, and more study has been devoted to its cultivation there than in any other part of the world.

For the past ten years Messrs. Doerr & Sons, of Harvel, Illinois—in the very heart of the maize belt of that State—have made the breeding of corn a special study; and Mr. A. T. Doerr, of that firm, has written an article in the *American Thresherman*, on the cultivation and also the breeding of mealies, which contains some very interesting information that should prove useful and instructive to Natal farmers interested in mealie growing. Mr. Doerr has chosen the title which we have used for the present article—“From the Kernel to the Crib”—and he takes his reader right through all the stages in the life of a mealie, from the kernel (giving an account of its structure) to harvesting and the management of special plots for breeding purposes. In this article we give our readers an opportunity of hearing all he has to say; but at the outset he tells us that “this is not all ‘book-farming’ by a good deal. I am a farmer,” he says, “and grew to manhood between the plough handles, and many of the things I will write about in this article have been studied out and tested on my own farm. I devote most of my time to corn growing and corn breeding, and I am never better satisfied than when I am engaged in corn improvement.” “Corn,” our readers may know, is an

abbreviation of "Indian corn," and is the American equivalent of our "mealies" or "maize."

I will commence, Mr. Doerr says, with the physical structure of the kernel, which is gluten starch germ, and the hull, or rain coat. This hull is very neatly arranged in three layers and contains rubber and glue. It is there to protect the germ, which in reality consists of three separate parts—embryo, root and the embryo stem. Both are fastened in the centre to the germ proper. You can see this with the naked eye, if you will soak a kernel in warm water for a few hours and remove the hull from the germ. This is the most delicate part of the kernel and has been protected by a tip cap, also on the bottom or point of the kernel, to keep out the wet, as well as by the rain coat, and so long as the kernel is held fast on the cob by this cap it will resist quite a lot of moisture, but when broken off the cob and put in moist ground, this is the mouth by which it drinks in water to start germination and the embryo root awakens out of its sleep and begins to feel for food. First it is supported on the milk of the germ and then the starch and gluten are eaten up; by this time the root has taken hold of the earth and the stem has pushed out into sunshine and is commencing to unfold its wonderful pack of living beauties. No peddler stopped at your door with more wonders than can be seen in this tiny stem coming through the ground like a pegging awl.

We were just looking at the embryo stem that had pushed its tiny form into sunshine, and I want you to go with me to the field again where the tiny visitor is. It did not come up by chance, but was planted by some human hand that had studied its ancestry, calculated its ability of reproduction, and estimated its value from a market standpoint. A thousand-fold is none too high, as every good kernel of corn has the power of producing one thousand kernels like itself. Am I overdrawing the picture? No; there is such a value hidden in this little stem. I certainly have not overdrawn its value. I simply call your attention to it at the beginning so we may have this picture before us—a picture of its high value, a subject worthy of our best thoughts, of our most earnest efforts, of our most careful attention—first in preparing for this plant, as it doesn't come by chance, neither will it yield its best results by chance, as its enemies are many, and its chances few without help, as these enemies are determined to make the corn grower put on his thinking cap.

But here we are again at the plant. I see you have made a good selection of the field. It appears to be a piece of clover sod. Yes. Fall plowed or did not plow it this spring? I fall plowed it. Well, that was a good job, for if the clover made a good growth last season and there were plenty of bacteria (nitrogen gatherers) on the roots, it has stored a large quantity of nitrogen in the soil. It makes more humus if turned

under green, but it also uses up more water and the ground lies too loose (in a dry season) for fibre and hair roots. We will notice them later. I therefore believe in pasturing clover in the fall with sheep, if possible, till October 15th, and then plowing six or seven inches deep, according to the soil. If the soil is light soil, five inches is plenty deep enough. You appear to have worked up a good seed bed here. How did you do it? First with the spading harrow or disc, then with a smoothing harrow.

How long was it in clover? Two years. Has the land had a regular rotation? Yes. Has it had any manure? Yes. Has it been pastured each fall and winter with sheep and cattle, also horses? Yes. Well, this is a most excellent piece of land, and I do not fear much trouble from insects, such as wire worms, cut worms, corn root worms or the corn root louse. Fall plowing, if done late, destroys many of these. All of these are very numerous and troublesome where crop rotation is not practiced, and in some localities not more than from twenty to thirty bushels of corn can be produced because the rotation of crops, pasture and manure have been neglected. We must bear in mind continually that we are farmers. The land depends on us for proper rotation and tillage, and it will yield in proportion as we drain with open ditch and tile.

Cultivate, rotate, manure and fertilize with manure, phosphate, rock limestone, ground and bone meal. Use no acids of any kind; they only stimulate and leave the ground poorer. All of these are necessary and depend on you and me. If we expect best results from our fields, we must use our best judgment; in short, we must farm better, and we shall reap more and better grain.

We will examine the cultivation and study the growth of the corn plant.

We have prepared an excellent seed bed on fall plowed land and have the corn plant peeping through the ground. Now we want to take the best care of it we can and make all we can out of it. I have always been a friend to the harrow and small corn, but you must not harrow the corn too young. When the leaves begin to unroll and when there are two or three blades you can commence, but wait till the sun is up a little, so it is reasonably dry. Yes, the harrow will cut out a stalk once in a while, but very seldom will it take more than one plant out of a hill, and that sometimes is a benefit instead of harm. Usually we get our corn too thick: this is oftener the case than too thin. So don't be afraid to harrow your corn a couple of times before you start the cultivator, and, if you do, it only cultivates the better.

Now the first cultivating, how shall it be? That depends on the work done before. If you have prepared a good deep seed bed and have harrowed twice and the corn and season are dry, you don't need to cultivate so deep, but as close as you can without harm. If your corn is

checked you will cross it a second time, and if you are not careful you will get closer this time than you did the first, because the hills are apt to be zigzag from the check rower, causing you to get closer on each alternate pairs of rows, first on the right and then on the left. This damage is not so great as is estimated. Sometimes these fibre roots, when broken off, at once go to work and send out a bunch of roots from the broken root and thus repair the damage very quickly and very substantially, and at the same time the plant is ready and equipped with another set or whorl of roots. These come under the surface while the plant is small. Two or three, sometimes four, of these whorls come to assist the plant. By the time we go over the corn the third time it is usually about knee high and then it begins to joint, we say. In other words, it assumes the nature of a stalk and at each of these lower joints you will find a circle around the stalk with little buttons or buds. These in a very short time develop into long touch roots (brace roots) and under favourable circumstances go down and anchor the stalk with such firmness as to protect it from the wind and storm. Now this brace root, as soon as it penetrates the ground, sends out thousands of fine roots and on these fine roots is found the hair rootlet. This is invisible to the naked eye, but you can see what looks like a mould. The work of these hair roots is to find food for the plant, and at this time it is pushing forward at such a rapid gait that we can notice the change each day, in a good healthy field of corn. At this time the leaves begin to lengthen and widen out, and begin to drink out of the atmosphere enormous quantities of water and feed the stalk as well as the roots. Prof. Holden says that ninety per cent. of the food is taken in through the leaves. If this be true we ought to be careful of the leaves as well as the roots. But the leaves and roots are only part of the machinery, or the working force, that is required to build up the stalk. The stalk is the trunk and in it are hidden the secret and power of reproduction of the kernel with which we have to start. No human hand can carve or shape a kernel that will develop this plant and then reproduce a kernel like itself. But the kernel we have followed has this power.

In the stalk is a pith. This pith is connected with a shank or stem that develops into a tender shoot at about the seventh or eighth joint, but the stalk and pith keep on and develop five or six more joints and then send out, at the very tip, a tassel or flower. The tassel comes out first, two or three days ahead of the silks. The tassel is covered with a substance like rye kernels. Each one of the kernels has six pods, very much like pea pods. These can all be seen with the natural eye. Each of these pods has from six to eight grains of pollen in it. When the tassel is four or five days old, it has matured to a point where these little pollen cells or pods burst open (bloom, we say), and these little grains or germs are visible only as a yellow dust, but every particle is a perfect



egg, as perfectly formed as the leaves, the stalk or any other portion of the corn plant. There are supposed to be from 800,000 to 1,000,000 of these minute eggs or germs of pollen on the tassel of a single corn stalk, and each one has a work to do. Can you guess what it is? I will tell you. It is the duty of each pollen germ to find a silk on the shoot below that is just now coming out from the tender shoot. This shoot is virtually the cob of the will-be ear of corn, and is provided with from one thousand to one thousand two hundred silks. These silks have a hollow channel in them, like a hair, and near the point they are covered with bristles. These bristles have a glue on them, and the silk also has a split or pair of lips at the point. These are as anxious to catch pollen as pollen is anxious to find a silk, and when a grain of pollen falls on the silk, it at once penetrates it and dissolves and travels back through the hollow channel to the end of the silk at the cob. Here fertilization takes place and the kernel is produced.

The silk is, properly, the female organ of the corn plant, and the pollen the male organ. Usually the tassel is called the male portion, but it only produces pollen and then dies, having served its mission. The cob is the means of producing the silk and is properly the mother. The silks are only the organ by which fertility is conveyed to each kernel to be formed, and after this is done the silk dies, but the kernel just commences to live and grow. It fastens itself into the cob with a root like the root of a plant. This root extends down through the hard substance of the cob to the pith, and it can be seen. Here it gets its food which is supplied by the thousand roots and leaves; the former have hunted all over the field, and the leaves have drunk from the atmosphere everything necessary for the building of the strong stalk, which, in turn, carries, in the form of a rich, sweet juice, the necessary food to develop starch, protein and oil. These are the three principal parts of a fully developed kernel of corn, from a chemical standpoint. These substances must all be carried up through the stalk and then through the shank of the ear, or the base of the cob, and then to the pith of the cob. Here the thousand baby kernels eat and drink the substance that is so carefully gathered by the mother.

Did you ever think of the cob as a mother? Is it any wonder if there are deformed or under-sized babies in this large family? And yet, if the mother fails to provide food for a single kernel in that family, it will be a runt, just the same as there are runty pigs in a litter if the mother cannot supply them with plenty of nutritious food. And this work the mother must perform every day for about sixty days to produce a perfect ear of corn.

By using an ear that we wish to reproduce and improve as the mother ear, we take the tassel off it and fertilize with another that has other good qualities that we want to have inbred in the mother ear.

Now, you must remember, if you want to get a smaller cob, that the mother ear should have the number of rows you wish on the corn you want to develop. For instance, if you want to develop with twenty rows, don't use mother ears with sixteen rows, but twenty rows, as the kernel has the power of reproduction.

A kernel from a twenty-row ear will be likely to produce, or start to produce an ear with twenty rows. Now, you may fertilize them with another ear with twenty-four rows, but you will not be able to change the number of rows on the mother plant the first season, but you can change the quality or colour of the baby kernel.

We have noticed the way the kernel is formed, how it is fertilized and then grows to maturity. All of this is in regular form and was designed by the Creator. But there is a work for man to do. He cannot make silks or germs of pollen, but he is the husbandman of the field as well as of the flock, and holds at his will the product of his earnest labour. He who would produce pedigreed stock must build safe and secure lots and keep the gates closed to prevent the mingling of scrub stock with the improved family he wishes to develop to a certain colour or type; and just so with the corn breeder. He has an interesting and scientific work to perform, and must perform it in the heat of the day or in the wet dews of the morning. No shirking from duty will win in this campaign for the best corn. Each ear, yes, each kernel, has an individual merit, and the corn breeder must study that merit in order to know what he must do to accomplish his purpose.

Allow me here to give you my method. Use it for all you can get out of it. I arrange my breeding blocks and number the rows, using 1, 3, 5, 7, etc., as male rows, planted from single ears, each ear numbered to correspond with the rows in which it is planted, using rows 2, 4, 6, 8, etc., as mother rows, all planted from single ears; and while we select the best we can find, you will be surprised to see the difference at husking time in these rows. This you can not tell or see if you mix the ears.

Now let us go back and start a block from two ears. No. 1 is an ear of very high quality of Reid's Yellow Dent. No. 2 is an ear of very high quality of Mammoth Johnson (yellow). I want to combine these two varieties for a special purpose, and in order that you may understand the work it will be necessary for me to show you the quality of each and the object I had in view in breeding them together.

Reid's Yellow Dent is one of the older varieties of yellow corn, and is a half blood, having been mixed in 1847, I believe, with small yellow corn on the larger flesh coloured corn brought from Ohio, by Robert Reid, to Delvin Prairie in 1845. This mixing was done by replanting the larger flesh (or reddish) coloured corn, which was a poor or thin stand that year, with the small yellow corn. This was not corn breeding:

though it was a very valuable piece of work; but it took a good many years to develop Reid's Yellow Dent to its present state of high protein and high oil and its extremely prolific qualities. These were the qualities I wanted to preserve if possible. Figure 2 represents a perfect type of Reid's Yellow Dent.

Mammoth Johnson is also an old variety, but its origin is not definitely known. I obtained seed from a good corn man who had carried his seed out of the field each year for fifteen years. He never attempted to breed corn and had depended altogether on field selection. This corn came under my examination and its beautiful colour, straight rows and cylindrical ears, with nicely covered tips, at once attracted my attention.

I had some of it analyzed and found it lower in protein than Reid's Yellow Dent. I also concluded the kernels had a little too much space between the rows. I decided to breed them together and see if I could not retain the colour of Mammoth Johnson and its straight rows, breed some more oil and protein into it; make it more prolific, like Reid's Yellow Dent, and make it mature earlier, if possible.

Next I will take up the breeding block in detail and show how we can register and pedigree corn.

How can we pedigree and register corn? Let us take the ears we used above, No. 1 as Reid's Yellow Dent, and No. 2 as Mammoth Johnson, and let us change them to A and B, for convenience, calling Reid's A and Mammoth Johnson B.

I want to preserve B's straight rows and fine colour, so I use it as the mother ear and plant it in my block No. 1 in rows 2, 4, 6, 8, 10, etc. I want to get some more oil and protein into B and make the kernels that grow on B more prolific, so I plant A in rows 1, 3, 5, 7, 9, etc. These ears have one thousand kernels and will plant ten rows, each thirty-six hills long, or eight rods. Planting three feet eight inches apart this makes block No. 1 twenty rows wide and thirty-six hills long of separate varieties of corn. If we let them alone they will mix, each fertilizing the other. Thus you will know little or nothing about what you have done; you might just as well, yes, better, have shelled these two ears together and planted them in twenty rows. This is the way some men pretend to breed corn. That is nothing but mixing corn, and that is the very thing every good farmer is trying to avoid.

Well, then, what is corn breeding? Corn breeding is the art by which we can tell what relation one variety is to another or how they were mated together. Thus in block No. 1 we wish to fertilize B with the pollen of A, so we watch for the tassels, and as fast as they come in sight we pull them out on all the rows of B and let all the tassels of A grow and fertilize B, and also itself. Now we have B a half-blood, but A remains the same, because every kernel received life from A; but B



furnished the mother's vitality to every kernel that was developed on the cob or shoot, which is the true mother. Now if we are satisfied with this first cross or with these half-bloods, then we use them and select from them to establish a type for B; if we are not satisfied we use the product of B as mother ears again and fertilize with A, as in the first case. A is not changed, but is inbred stock now, and when used to fertilize B a second time we get a three-fourths blood, and so on, the next being seven-eighths. Perhaps you will have to use other varieties to accomplish your desires, and to fit the locality in which you live. But you can do much for improvement of corn if you breed it and do not mix it.

I wish every farmer would wake up and study this subject till he knows and sees the importance of better methods of corn production. God may have made a better and more valuable plant, but I don't know where to find it or by what name to call it. If this is true, then culture and breeding of corn is a most valuable and honourable profession.

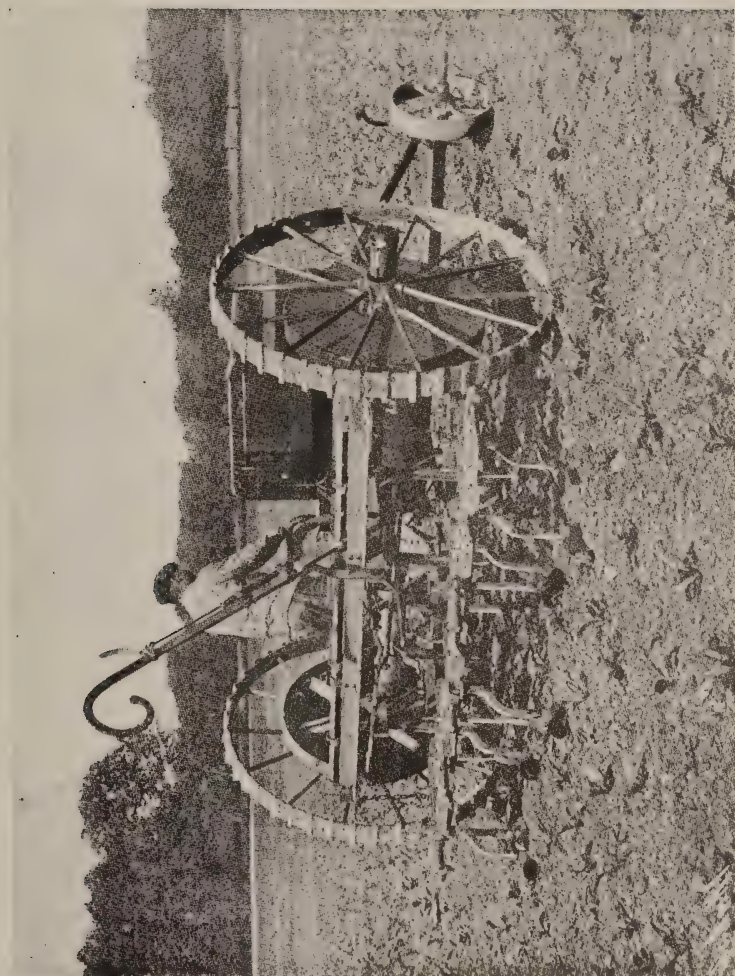
---

There are three conditions essential for an object to be of value. First, the article must have utility—it must meet a certain want; second, that want must be of such a nature as to take some effort to gratify it; third, the object must be of such a nature as to command other services or exchange for other wealth.

---

ESTIMATING WEIGHT OF HAY.—In estimating the weight of hay in a stack by measurement, everything depends on the solidity of the stack. Hay runs from 220 to 320 cubic feet to the ton; the more solid the stack, the fewer the cubic feet required to weigh a ton. Average stuff would run about 270, but judgment is required as to what figure to take. To find the cubic contents of a square-cornered stack, measure the length and breadth about half-way between the bottom and the eaves, allowing about 6 in. for loose hay on the outsides. Then take the height from the bottom to one-third of the distance between the eaves and the ridge, and multiply the length by the breadth, and that total by the height. If all the measurements are in feet, the result will be cubic feet, and that total divided by whichever of the figures given above you select will give the number of tons approximately.—*Queensland Agricultural Journal*.





THE AUTOMOBILE HOE.—I.  
The Automobile Hoe in Operation.



## ***Horsesickness.***

### PROGRESS REPORT BY MR. H. WATKINS-PITCHFORD.

MR. H. WATKINS-PITCHFORD, the Government Bacteriologist, has sent the following progress report on Horsesickness investigation work to the Minister of Agriculture:—

Sir,—I have the honour to forward herewith for the information of the Minister of Agriculture a further brief progress report dealing with the recent field tests undertaken in connection with the investigation of the disease Horsesickness.

Attached will be found a report from my assistant, Mr. Harber, showing the present state of the enquiry at the Tugela Camp.

The details of this Report are of interest and significance, tending to prove conclusively the correctness of the theory that the immunity of the horse to Horsesickness is a matter of degree, varying not only amongst different animals but fluctuating in the system of the individual, and rarely, if ever, attaining to such a degree of immunity as will suffice to resist throughout life an infection which seems to vary so greatly both in degree and kind.

It is improbable—as Mr. Harber points out—that the intensity of the Horsesickness infection in the Tugela Valley in summer can be surpassed in virulence in any other part of the Sub-continent.

The exposure, therefore, by night and day, of the experimental animals in this locality must be held to constitute a test as severe in its nature as any horse is likely to be subjected to, and far more severe than the average horse will encounter. The results of the exposure of the experimental horses to such conditions are given briefly in the report subjoined. All the control, or untreated horses, have now succumbed, while three of the treated horses have also died from uncomplicated Horsesickness, leaving ten of the treated or protected horses which have resisted for a long time the very virulent natural infection of the locality.

Of the protected mules, the original number (22) have resisted the disease, while of the eight unprotected mules—which were all old animals—three have died from Horsesickness and another is reported as dying at the date of writing. The original object of this field enquiry—which was to ascertain whether the treated animals possessed any immunity to the disease, and, if so, to what extent—has been successfully attained, and there is no room for doubt that the inoculations to which these animals have been subjected have increased to a great extent their powers of resistance to the disease. It is probable that had the treatment of these horses been more prolonged or more frequently repeated,

the degree of resistance induced would have sufficed to have avoided any deaths whatever amongst such animals.

The endeavour throughout has been, however, to keep the process or details of treatment as simple and practicable as possible in the hopes of raising or increasing the immunity of the horse just so far as will suffice to withstand the infection encountered under ordinary summer conditions. More than this has not been attempted.

On the other hand, it must be remembered that the test animals have not been subjected to hard work, and it may be that prolonged exertion would not have been followed by such encouraging results. Against this, however, it seems fair to place the fact that infection has been constant, excessive and prolonged, factors which would not obtain under ordinary conditions.

The value, however, of the observations from a comparative point of view remains unimpaired, and, while the entire and absolute immunity of all the treated animals was not reasonably to have been expected, it was hoped that the enquiry would result in determining the difference between treated and untreated animals, and that in so doing it would demonstrate the value of the process devised as a possible means of increasing the resistance or immunity of the horse and mule to a serviceable extent.

It is possible that in time more of the protected or treated animals now at the Tugela Camp would succumb if they continued to be exposed to such abnormal conditions of continuous and excessive infection, but whether this may be so or not the protection already enjoyed by these animals in the past must have been of a substantial nature and such as was not shared by the fifteen control horses and mules which have already succumbed to uncomplicated Horsesickness.

As this report is only intended to deal with the results of the tests now satisfactorily concluded at the Tugela Camp, such as are dealt with in the accompanying report of Mr. Harber, I have not attempted to deal with the other lines of the investigation, which will, I hope, furnish material for a further progress report at no distant date.

It is now my intention—as all the control or unprotected horses have succumbed—to close down this experimental camp. The services of my assistant are urgently needed in connection with other branches of work, and one or two of the native assistants have experienced attacks, of malarial fever. As the main object of the enquiry has been attained, no great advantage will attend the further prolonging of the Camp, and I shall endeavour to arrange for the maintenance of some of the experimental animals upon the Coast and return others to the Laboratory for further observations.

The practical outcome of the work dealt with above appears to me to consist in the adoption of the process upon adequate lines in a district



in which a recurrence of the disease may be confidently expected every year.

I have already approached the Commandant-General of Militia with reference to his concurrence in the inoculation of the horses of one of the mounted Regiments most exposed to the risk of infection.

Such inoculation should preferably be made during the winter months in order to ensure the establishment of a serviceable degree of immunity before the onset of the next sickly season. An arrangement of this sort would, I believe, meet with the approval of the Minister.

This broad and adequate application of the process before general adoption is attempted is greatly to be desired, inasmuch as the investigation of this disease in the past has been rendered slow by a meagreness of resource and a reluctance to attempt conclusions based upon insufficient data, difficulties which would be to a great extent overcome if facilities such as those afforded by the horses of a mounted regiment could be secured, the animals of which are already insured by and under observations of officers of the Government.

It is my duty to acknowledge the assistance and encouragement which has been extended to this important branch of research by the Minister and by yourself whenever opportunity for such has arisen.

I have the honour to be,

Sir,

Your obedient Servant,

(Sgd.) W. WATKINS-PITCHFORD, Lt.-Col.,  
Government Bacteriologist.

To the Government Bacteriologist.

Dear Sir,—I beg to further report upon the progress of the work of the Horsesickness Experimental Camp, at the mouth of the Tugela.

Since my report of June last, the Camp has been visited with as severe Horsesickness conditions as would exist probably anywhere in South Africa.

As I have reported to you from time to time, three of the protected horses have succumbed from uncomplicated Horsesickness, which deaths were due doubtless to the condition of intense natural infection.

Ten of the protected horses are still living, this in spite of the intense infection which has been so virulent as to cause the death of twelve of the control or unprotected horses, of which there are now none living—most of them having been dead of Horsesickness for some considerable time.

Of the twenty-two protected mules there have been no deaths from Horsesickness although quite a number of reactions have been recorded.

Out of the eight control mules three are dead, and I expect another will shortly succumb.

It will be seen from the foregoing facts that the process of protecting horses, though not absolute, greatly increases their power of resistance to Horsesickness, and should do much to reduce the mortality among stabled and cared-for horses.

(Sgd.) A. F. HARBER, M.R.C.V.S.

---

## ***Sugar Cane Cultivation.***

---

### THE SYSTEM RECOMMENDED FOR CUBA.

---

IN his recently-published book, "Southern Agriculture," Professor F. S. Earle, the Director of the Cuban Agricultural Experiment Station, deals at considerable length with the systems of cane cultivation in vogue in different countries, and among other things he gives an account of the system recommended by the Cuban Experiment Station to cane cultivators in that island. This account is summarised by the *Agricultural News* of Barbados in its issue of the 14th November, 1908.

The system recommended is an improvement upon that which has long been in use by Cuban growers, in that it advocates a better preparation of the land, the growth of a leguminous crop before planting the canes, and the intelligent use of commercial fertilizers.

The land which is to be planted with cane in October or November should be ploughed about nine months previously (February or March), and a leguminous crop, such as velvet beans, sown in April or May. About August this crop should be ploughed under, and the land harrowed two or three times with the disc harrow. When the canes are to be planted, it is recommended that deep furrows, at distances of about 7 feet from each other, be opened by a double mould-board plough, and a complete manure of artificials (where necessary) distributed at the bottom of the furrows previous to planting. The cane used for planting purposes should be selected from vigorous plant canes or first ratoons, and the pieces set horizontally in a continuous row at the bottom of the furrows. If the soil is moist they need not be covered to a depth of more than 3 inches, but if dry, a depth of 6 inches of soil is recommended.

Harrowing takes place just as the shoots are peeping through the

ground, the harrows being drawn in the same direction as the rows run. This operation greatly encourages early growth. Cultivating or hoeing begins when the plants are well up: this is usually done in Cuba with a horse cultivator, and the hand hoe is needed only for removing weeds and loosening the soil between the plants in the rows. It is recommended that the operation be repeated frequently in the early months of the year in order to keep down weeds, and to maintain a surface mulch of loose soil. In April, or early in May, it is advised to sow cowpeas broadcast between the rows of sugar cane, covering them afterwards with the horse-cultivator.

The above method of cultivation is specially adapted for lands which have good natural drainage, but on land deficient in this respect, the system should be modified, and the land ridged up around the canes by means of disc cultivators.

In Cuba, ratoon crops of sugar-cane are produced for several years on the same land, and provision must be made for maintaining the soil in good condition and keeping up the supply of plant food. The methods devised by the officials at the Cuban Experiment Station for this purpose is as follows: as soon as the cane is cut, a horse rake is drawn across the rows, and worked so that the trash from the first "middle" (*i.e.*, the space between two rows of cane) is pulled on to the second, and that from the third middle on to the fourth. In this way the spaces between the rows across the field are alternately bared or double-trashed. The cleared "middles" are now ploughed, the soil being turned away from the cane rows, and the last furrow runs close up to the cane so that artificial manures can be applied around the roots, if necessary. The soil is then thrown back by a cultivator, and is kept well tilled by regular cultivations until the beginning of the rainy season, when the ratoons have grown to a good height. At this time the cultivated middle spaces are sown with cowpeas.

The alternate spaces which have been double-trashed are so thickly and heavily covered that practically no grass or weeds can come through, and these portions receive no further attention during the season.

It will be seen that with this system of cultivation the ratoon cane crop is growing under excellent cultural conditions, for one side of each row is thoroughly cultivated, while the other is protected by a heavy mulch of trash, which serves to retain moisture. In the following year, with the second ratoon crop, the treatment of the middles is reversed, the spaces on which the cowpeas were cultivated in the previous year being doubly trashed, and *vice versa*. In this way the soil all over the field is thoroughly aerated and pulverized once in every two years.

## ***The Automobile Hoe.***

---

### A NEW APPLICATION OF AUTOMOBILISM TO AGRICULTURAL MACHINERY.

---

IN a note in our last issue we referred to the new use to which motors are now being put to in America for the driving of harvesters, the motor being mounted on the harvester. A recent issue of the *Scientific American* describes a further example of the application of automobilism to agricultural machinery—an automobile hoe or cultivator. This new implement, which is designed especially for the cultivation of beets and other crops planted in rows, has six blades and is driven by an explosion motor, by means of gearing. The chassis, constructed of steel angle bars, is pointed in front and rests on four wheels, of which the front pair serves for steering and the hind pair for driving. In the front of the machine is a two-cylinder, four-cycle motor of 10 or 12 horse-power, which may be adapted to burn either carbureted alcohol or gasoline by an easily effected change in the carbureter. The feed and escape valves may be controlled by hand, and the ignition is furnished by accumulators, an induction coil and electric bougies. The bearings are continuously lubricated by a mechanical device. The cylinders are cooled by water, which is continuously pumped through a radiator of the wing type, which is shown very clearly in the second of the two illustrations, for which also we are indebted to the *Scientific American*. On the axis of the flywheel and almost surrounded by its rim is a conical friction clutch, so constructed as to exert no lateral pressure on the collars. This clutch is connected by an elastic sleeve with the speed changing box, which contains two trains of gearing, one for forward, the other for backward motion, the latter effecting a reduction of speed in the ratio of 1 to 3. The differential is controlled by an endless screw. The maximum speed of the machine is about 2 feet per second or a mile and a quarter per hour. Because of the reduction mentioned above the speed backward cannot exceed 8 inches per second. The driver sits in the centre of the machine and steers by means of a Galle chain connected with the front pair of wheels. But the apparatus is so arranged that the position of the operator may be varied to suit the requirements of the work. In some cases he walks behind the machine, where he can watch the hoes and regulate the speed accordingly. On reaching the end of the row the machine turns on one of its driving wheels as on a pivot, and that wheel returns along the track made by it in coming.

The automobile hoe complete weighs 2,750 pounds, and cultivates a strip more than 8 feet in width. Over horse hoes it possesses the ad-



vantage of suppressing the trampling of the young plants, in addition to greater uniformity of action. Hence it will, doubtless, be generally employed wherever drilled crops are cultivated on a large scale. By the substitution of blades of special form the machine can be adapted to accomplish, rapidly and neatly, the preparation of the ground before sowing, which is so important, especially in the cultivation of beets.

---

## ***Paper from Maize Stalks.***

---

### INVESTIGATIONS IN THE UNITED STATES.

---

IN our last issue we drew attention to the discovery, which it is stated has been made by the chemists of the United States Department of Agriculture, of a substitute for wood pulp—namely, mealie stalks. A communication has now been received by the Minister of Agriculture from the Commercial Agent (Mr. Harrison), who has been making enquiries on the subject.

Mr. Harrison has been in correspondence with the United States Department of Agriculture in Washington, and has received the following communication:—

“The announcements in the public press on the results of investigations on the manufacture of paper from cornstalks are not authentic or entirely accurate. It is true, however, that the Bureau of Plant Industry and the Forest Service of the Department of Agriculture are investigating the use of vegetable fibres other than wood as raw materials for paper making. No publications have yet been issued and there probably will be none until the work is completed.

“A Forest Service press bulletin, giving some of the results already obtained, is now in preparation, and I will see that you obtain a copy of this bulletin as soon as it is ready for distribution.”

The Commercial Agent also encloses with his communication a copy of an article sent him by the Board of Trade and culled from the *Paper Mill*, on the subject of cornstalk paper which explains the process. The article runs as follows:—

“Washington, October 14th, 1908.—Experiments conducted by chemists of the Bureau of Forestry and Plant Industry in the new Laboratories here have demonstrated, it is said, that paper can be made from cornstalks, by much the same process as that used in treating wood

pulp, at a cost, when machinery has been perfected, of a little over half the cost of making it from wood pulp.

"The scientists feel sure that it is absolutely practical, the newly discovered process having been subjected to every test.

"Samples of the cornstalk paper made by Dr. H. S. Bristol and his assistants were shown to-day. It is made in five grades of different colour and texture. The first grade is of dark gray colour and heavy texture, resembling parchment. It is almost as tough as sheepskin and commercially might be used for many purposes.

"Another grade is of a lighter gray of the same character. There are two shades of yellow and one of white. The white paper is made from the hard outside shell of the cornstalk and the yellow from the inside, or pith. The yellow paper has a large fibre, and in many respects is like the paper manufactured from rags and linen, soft and pliable, and might be utilised by newspapers.

"In making paper from cornstalks the scientists have used the "soda" process, which is acknowledged by paper manufacturers to be the best means of making paper from wood pulp. The cornstalk pulp is cooked for from two to two and a half hours; it takes from twelve to fourteen hours to cook wood pulp.

"Dr. Bristol says he has already made paper from cornstalks almost as cheaply as it can be made from wood pulp. It has taken fifty years to develop the present methods of making paper from wood pulp. Dr. Bristol believes that when proper machinery is built and the farmers realise that a good revenue may be derived from the sale of cornstalks, paper will be manufactured from the new material at half the cost of wood pulp paper.

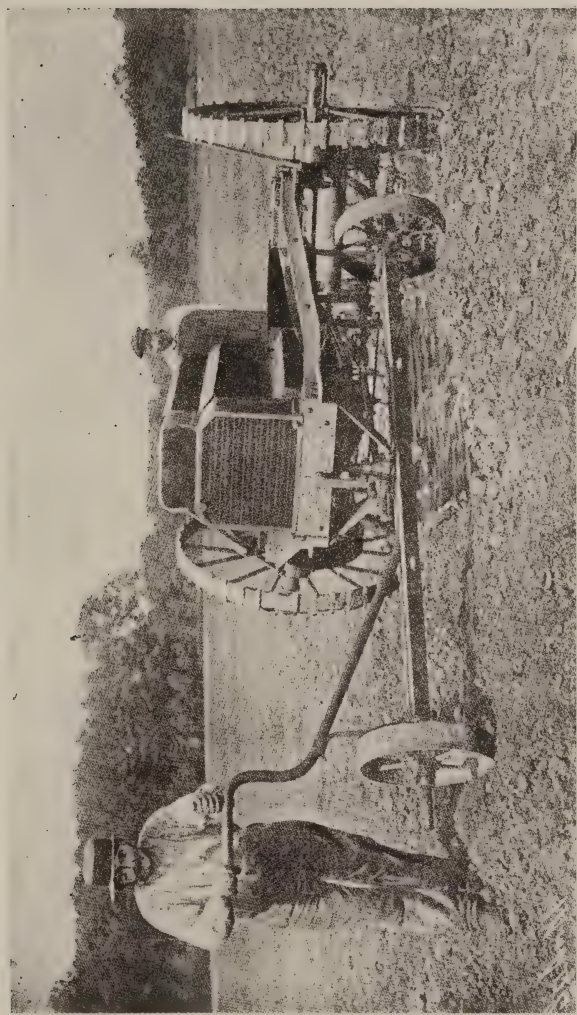
"With wood at \$8 a cord, paper is made from wood pulp at a cost of \$13 a ton. Cornstalks can be bought for \$5 a ton and the paper made with the present primitive machinery for £14 a ton."

Natal farmers will follow with interest the progress of these investigations, for if it is found feasible to manufacture paper from mealie stalks upon a paying, commercial basis, there will be a good future before Natal as a paper manufacturing country. At present most of our mealie stalks are wasted every season, but if they can be sold to paper factories they will prove a welcome source of income to the farmer.

Mr. Harrison has promised to keep the Department of Agriculture informed as to the progress of the experiments, and any information of interest to our readers which may be received will be published in the *Journal*.

---

Exertion for the meeting of individual wants is *labour*; play is exertion that has no end beyond itself.



THE AUTOMOBILE HOE.—II.  
The Automobile Hoe Turning.





## ***Inter-Colonial Agricultural Union.***

*(Continued from page 1591, Vol. XI.)*

### RAILWAY MATTERS.

There were several resolutions bearing on railway rates, etc.

Mr. King (Natal) moved:—

“That this Congress is of opinion that the Railway Administrations should be requested to consider the advisability of carrying stock and produce intended for exhibition at agricultural shows free of charge.”

Much talk was heard, he said, as to railways being worked on a business basis; he was not sure that this was not a good business principle.

Mr. De Villiers: Is this a matter of charity.

Mr. Johnstone (Natal): No; it would especially assist small societies to continue their operations.

Mr. R. H. Struben (C.C.) thought the request was unreasonable. It was hopeless to ask the Cape Government for any such concession. How could he ask a Government already in difficulties to go further into debt?

Mr. Poultney thought the trouble had come from his Colony (Transvaal). Their General Manager said he thought their rates were as favourable as those of Natal and the Cape, but when they proved to him that the Transvaal rates were 110 per cent. higher, he replied that the other Colonies would have to level up. He knew their General Manager would not allow judges and exhibits to travel free. If they asked for half fare for the double journey they might get it.

Mr. Evans (Natal) said when stock was sent free in Natal, stuff was sent to the shows which was quite unfit; it was simply sent on the off-chance of sale.

Mr. King (Natal) dissented, but the motion was lost by a big majority.

Another motion to the effect that railway rates should be sufficient to cover cost of haulage and handling was withdrawn.

### WOOL CARRIAGE AT COAL FREIGHTS.

Mr. Struben (Transvaal) moved:—

“That in the interests of the wool industry, it is desirable that the railway rates, now being charged for the transportation of this staple product to the coast, should be reduced to the freight for coal.”

He said the cost of carrying wool was about 1½d. per ton per mile, whereas coal was carried for ½d. per ton per mile. Considering so many trucks were sent empty to the coast, he thought wool should be carried at the cost of coal.

Mr. Robertson seconded.

Mr. Palmer (Director of Agriculture) thought the resolution an impossible one if the mover claimed the same rates for wool as for coal. The railway authorities would not treat with such a resolution. For instance, he pointed out the space occupied by a ton of coal compared with that taken up by a ton of wool. O.R.C. farmers took the matter up with the C.S.A.R. and the reply was that the freight could not be reduced unless the wool were compressed.

Mr. Evans (Natal) protested vigorously against the suggestion that wool should be carried at the same rates as coal. He pointed out that even if the price of wool were only 6d., the value of a ton of wool would be £50, whilst that of a ton of coal would only be 7s. 6d. at the pit's mouth, and what was more coal went down by train loads as compared with wool by truck loads. The £50 worth of wool could afford to pay 1½d. a ton per mile, and could not be treated on the same basis at all as coal.

Mr. H. Wiltshire (Natal) also pointed out that the railway scarcely handled coal at all. It was loaded straight into the trucks at the mine and unloaded at the destination by the consignee; the coal trade was going on all the year round providing a regular income; wool carriage was only for a short season of the year.

The original resolution stood without the words "at the same freight as coal," the request being that the rates "be considerably reduced." This Mr. Van Alphen thought more reasonable and would support, but he could not ask that coal freights be applied to wool.

Mr. Struben consented to leave the resolution in its original form.

Another delegate pointed out that wool could not be compressed before it had been seen by the buyer, and yet another that the disadvantages of compressing might outweigh any slight advantage in lower rates.

The amended motion was carried by 17 votes to 2.

Mr. T. W. Hunt (Transvaal) moved:—

"That it is desirable that wool bales, sacks, fruit boxes, and other materials designed for the packing and conveyance of South African agricultural products, should be carried on the S.A. Railway system at especially low rates."

He remarked that it was absurd and a disgrace to the railway systems of South Africa that it should cost more to bring material from Durban to the Transvaal than the original cost of the material plus carriage by sea from Europe to Durban.

Mr. King (Natal) thought this was more a question for the Customs Union. The freights on over-sea boxes and material complained of by Mr. Hunt were for the protection of the South African article.

The motion was carried by a small majority.

#### DOUBLE-DECK SHEEP TRUCKS.

Mr. Hunt moved:—

"That this Conference exercise its influence to obtain the use of

double-decked trucks on the railways of South Africa for the conveyance of small stock, such trucks to be provided at the same rates as those now prevailing for single trucks."

Mr. Hunt said the sheep trucks of the South African Administration were a disgrace to any country. The railways knew how to charge the farmer and in many instances did not give value for the money. They should press the South African Railways to be up to date and use the same class of cars as Australia and New Zealand.

Mr. Bailey seconded.

Mr. Mitchell remarked that in Natal the excuse of the Railway Department was that there was insufficient small stock carried to justify the expense of double-deck cars, but now that sheep were increasing so rapidly was the time to press home the point.

Mr. King pointed out that double-deck cars could be used for no other purpose, so that Government would be unlikely to go in for them without making proper enquiries as to whether they would be justified. He favoured asking that something should be done by way of experiment.

In reply to the Rev. Scott, the mover consented to strike out the words after stock.

Mr. Ernest Edmeades moved:—

"That this Conference request the various Governments to institute enquiries as to the practicability of double-deck trucks for the conveyance of small sheep over the various railway systems."

He thought this would overcome all the difficulties.

The Secretary: All the difficulties of the railways. Some members thought the use of double-deck trucks would increase the torture of sheep in transit.

Mr. Borthwick seconded the amendment, and said small stock at the present time suffered quite enough in transit, and if the proposed new mode of conveyance was going to increase their torture Congress should not support it. The Cape conceded the request of some farmers to accept more sheep per truck, but it was so abused that small stock were frequently removed from trucks dead. Then the number was reduced to 42 with a sort of compromise that farmers might truck more if they took the risk. He favoured enquiries and experiments before adopting any such proposal.

Mr. Hunt, in reply to the debate, thought the double-deck truck more humane than the present conveyance with no cover except a net to prevent the sheep jumping out. He pointed out it was as much a danger to put too few sheep into a truck as too many.

The amendment was lost and the original motion carried.

#### ERADICATION OF SCAB.

The following motion was on the agenda for re-affirmation:—

"That this Conference suggests that the various South African

Governments be approached with a view to the appointment of an Inter-Colonial Commission for the purpose of framing Scab Laws, which shall be, as far as possible, on the same lines, and uniformly stringent in each territory."

Mr. R. H. Struben (C.C.) remarked that the resolution called for certain definite action by the different Colonies. In view of the fact that a large section of the farming community believe that scab does not have an effect on the market, and with a view of educating them on the subject, he moved as an addition to the resolution:—

"That this Conference urges on the various Governments of South Africa the necessity of appealing to farmers for loyal co-operation in the eradication of scab, and in undertaking to take educational steps to prove to sheep-farmers the ultimate great financial benefit that must accrue from the eradication of scab even at the cost of temporary loss by reduction in the price of wool and skins."

This was seconded.

Mr. Robertson, speaking for the Transvaal, said active educational measures on scab were no longer necessary. The majority of farmers recognised that scab could be eradicated, and they were trying to do it. (Hear, hear.) The Transvaal were, rather, talking of passing legislation dealing with compulsory dipping and quarantining. Passing such a resolution as that coming from Mr. Struben would not help at all. They must ask the Government to take stronger measures.

Mr. Johnstone (Natal) pleaded for unity of action and similar laws throughout South Africa—and vigilance in seeing that they were stringently carried out. (Applause.)

Mr. Nicholson confirmed Mr. Robertson's view, remarking that the Government had written to the Cape Government pointing out that scabby sheep had been sent from the Cape to Rustenburg and Marico districts. General Botha had called a meeting for the 9th January next. The circular announcing the meeting contained regulations more stringent than any now in force on the subject. But no matter what they did in the Transvaal, South Africa could not be free from the pest until its laws were uniformly stringent. Scab was probably robbing South Africa of £250,000 a year. He invited all present to vote for the original motion.

Mr. Ehrlich spoke of the "milk and water" character of Mr. Struben's proposal. No motion could be too strong on the subject. The time had gone for pious resolutions like Mr. Struben's. Let them lay down what they wanted; they knew the requirements very well. The O.R.C. was the only Colony where simultaneous dipping had been in existence for the past five years. He admitted that the regulations had been relaxed. (Laughter.) The improvement realised in the eradication of scab may have justified the Government in thinking relaxation advisable, but he, the speaker, thought the time was unripe for any



weakening of regulations on the subject. The great danger was trek sheep coming from the Cape in times of drought; that was the problem they alone could not solve; there must be inter-colonial action.

The Rev. Mr. Scott (Natal) intimated that it was owing to the initiative of the Natal Agricultural Union that Natal was educated up to the position she occupied to-day in regard to freedom from scab, and Mr. King said Natal would be free from scab to-day but for the other Colonies.

Mr. Bailey advocated the native being treated in the same way as the white man was or all their efforts would be in vain. So far as he knew there was not a single dipping tank in any location in the Transvaal.

Mr. Hunt said it was absolutely necessary for the future of the wool industry of South Africa that scab should be eradicated as soon as possible. The whole trouble was that certain Governments pandered to the men who wanted anything but progress. (Laughter.) They must give such Governments to understand that they were going straight for the pest and that they were going to have scab eradicated in the shortest time possible. (Hear, hear.)

Mr. De Villiers (Cape) assured the Congress that although scab was rife in the Cape years ago, it was now becoming unknown in some districts.

Mr. O. E. G. Evans (Cape) feared from remarks dropped that there was an idea that the Cape was very scabby. (Laughter.) In his district, for instance, there was very little scab. He hoped scab regulations would become more stringent than in the past.

Mr. R. H. Struben resented being told that the Cape had "milk-and-water" views on scab, and claimed that he moved for simultaneous dipping throughout the country at the Pretoria Conference, but it was said he was going too fast. At the Cape Congress he moved to do away with "milk-and-water" dips and that caustic soda and sulphur be the recognised dip. So that he claimed they were not behind other Colonies in the desire to eradicate scab. All he asked for was that statistics should be gleaned and proofs compiled to convince the backward man that scab can be eradicated and that eradication will benefit him and the country at large. At the same time he concurred with the motion on the paper.

The motion was carried unanimously, only three having voted the addition moved by Mr. Struben.

#### LABELLING PRODUCE.

The following resolution was adopted:—"That this Congress is of opinion that for the public protection and the encouragement of the sale of South African meat and other South African produce, all produce imported from oversea should be clearly labelled as such by the seller."

## **Agricultural Research.**

### TWENTY YEARS' WORK IN VERMONT, U.S.A.

#### II.—STOCK AND DAIRY HUSBANDRY.

LAST month we published a short account of investigations undertaken by the Vermont Agricultural Station into fruit and general crop growing, confining ourselves to the results of such investigations as were likely to prove of interest to Natal farmers. This month we conclude our notice, dealing with stock feeding and dairy husbandry.

#### STOCK FEEDING.

*Effect upon Milk Flow of Addition to Ration of Emulsified or Unemulsified Fat.*—Sundry investigators having published the results of experiments into the advisability of adding an extraneous fat to a cow's ration as a means of improving the quality of the milk ("feeding fat into milk"), trials with four cows in 1898 and ten cows in 1899 were made, using raw and emulsified cottonseed oil and emulsified maize and linseed oils. These were fed with maize meal and bran against the same rations without oil. Milk yields to the unit of dry matter eaten were always increased when oil was fed, the increase amounting from 3 to 9 per cent. Total solid and fat yields were increased by the cotton seed oil feeding from 2 to 15 per cent. and on linseed oil feeding 2 per cent., but not on maize oil feeding. The fat content was always increased at the outset, but quickly returned to normality or less when maize or linseed oils were fed. This increase—unaccompanied by rise in the percentage of solids-not-fat—was fairly permanent, lasting from 4 to 6 weeks at least, when either raw or emulsified cottonseed oil was used. Since the same changes were brought about when raw oil was fed as followed the use of emulsified oil, it is safe to say that emulsifying was of no avail as a means of feeding fat into milk.

*Feeding Value of Buckwheat Middlings.*—Ten cows were used during two seasons. When 4 lbs. buckwheat middlings replaced 1 lb. mealie meal and 1½ lbs. each of cottonseed and linseed meals, production dropped about 3 per cent.; when it replaced maize meal, the production gained about 4 per cent. The results the second year were more pronounced. A buckwheat middlings ration seemed fully equal to a cottonseed-linseed ration and carried a shade more digestible protein. It made from 8 to 11 per cent. greater product than did the ration of half maize and half bran. Whenever fed, the quality of the milk was improved nearly 0.20 per cent. This disproportionate increase in the fat content was observed

both years. Buckwheat middlings fed in considerable quantities tends slightly to increase the fat percentage of milk.

*Feeding Value of Hominy Feed.*—This breakfast food residue was fed daily two successive years, each year as compared with bran and with half and half cottonseed-linseed meals and the first year also as compared with gluten meal, 16 cows being employed the first and 11 the second year. It proved equal to average wheat bran as a milk maker and to be superior to a rather inferior grade thereof; but it was not equivalent of either gluten meal or the cottonseed-linseed ration; neither was it as economical a concentrate as were these.

*Feeding Value of Dried Molasses Beet Pulp.*—This material, a residue from diffusion batteries of beet sugar factories mixed with residuum molasses, was fed for six months to six cows in comparison with wheat bran, and to five cows in comparison with silage. Pound for pound of dry matter it seemed essentially equivalent in feeding value to wheat bran and mature maize silage.

*Heavy Grain Feeding.*—An increasingly heavy grain ration was fed to three cows. It began at 6 lbs. and reached 12 to 14 lbs. daily. The nutritive ratios ranged from 1:5.6 to 1:7.9 with two cows, and from 1:3 to 1:6 with the other. One cow maintained the flow and its quality for 24 days; another "responded to an additional pound of meal with an increased milk yield of better quality." Both shrank when put for 15 days on nearly equivalent amount of a wider grain ration. When placed on another grain ration of equal weight but narrow ratio, one held her own, the other continued to decrease in yield. A farrow cow fed equal weights of bran and cottonseed meal, beginning with 6 pounds daily and increasing to 12 pounds, slightly bettered her flow. On 10 pounds bran and gluten feed she bettered it yet more; and on 10 pounds clear bran she lowered it. No unfavourable effects on cow or product resulted during the two months' trial.

*Feeding Values of Beets and Carrots.*—Two cows were fed for 16 weeks on beets and carrots. Carrots far surpassed beets in feeding value.

*Feeding Value of Artichokes.*—A single cow was fed artichokes as compared with silage. Ten per cent. less milk was made on the silage to the unit of dry matter. The quality of the milk was unaltered. It claimed for the French improved white artichoke that all sorts of animals would eat readily both tuber and stalk. The cows ate the tubers well but not a single one would eat the stalks.

*Feeding Value of Pumpkins.*—Three cows were fed under conditions where pumpkins, seeds and all, were substituted for silage, about 2½ pounds of pumpkins being fed in place of 1 pound of silage. Practically the same production, but 5 per cent. more of the unit of dry matter, was made on pumpkin feeding than on the silage ration. The quantity of the milk remained unchanged.



*Feeding Value of Apples.*—Four cows were fed in alternative periods rations where apples replaced three-fourths of the silage. Eight per cent. less product was made on the apple than on the silage ration. The former contained, however, 8 per cent. less food; hence the unit of dry matter made as much on one ration as on the other. The quality of the milk was not altered. Pound for pound, apples did not prove equal to silage. Pound for pound of dry matter, they appeared to be nearly as useful. Apparently they have about 40 per cent. the feeding value of silage. No damage resulted to the cows from somewhat liberal feeding.

*Effect of Grooming of Cows upon the Milk Flow.*—Eight cows in two seasons were uniformly fed, but were either groomed or left ungroomed in alternating periods. The first year no appreciable effect was observed; the second year, 4 per cent. less milk was made when the cows were groomed. The quality of the milk was unchanged. Grooming cows should tend to better the keeping quality of milk and the grade of the butter, but does not seem to add to the milk flow or its fat content.

*Wool and Wool Measurements.*—Samples were taken from shoulders, bellies, hips, thighs, body wrinkles and neck wrinkles of two rams and two ewes. They ranged from .00089 to .00108 inches in diameter and in the order stated. The ewe wool was a trifle less coarse than that of the rams (.00095 vs. .000967 inches). A trial of the effect of nitrogenous and carbonaceous rations on wool fibre measurements was indeterminate in its outcome.

#### *Pig Feeding.*

Sour skim-milk produced just as good or a shade better results, pound for pound, as did sweet skim-milk. Two ounces of maize meal to each quart of skim-milk made a pound of pork at the least cost for food. Larger amounts of maize meal produced more rapid growth, but at an increased cost for food per pound of pork. A method of feeding early in life which tends to develop bone, muscle and digestive organs, rather than to form fat, builds a foundation on which greater profit may be made when heavy feeding begins in preparation for market. During the finishing off process 12 quarts of skim-milk daily per pig, with all the maize meal that would be eaten, produced a more rapid growth at less cost per pound than did 6 quarts of skim-milk under similar conditions.

It is usually stated that bulky or watery foods tend to promote stomachic and intestinal growth and to increase the shrinkage. Yet in a series of tests the shrinkage of pigs fed bulky feeds was little if any greater than that of pigs fed more concentrated rations, while the shrinkages on watery and on concentrated rations were identical.

To the query whether it is "more profitable to feed skim-milk freely or to feed less, making up the shortage in grain"—or, in other words, the relative economy of diluted or concentrated rations—the answers given were: "No marked effect one way or the other"; and "The cost of



food per pound increases and the profit slightly favoured the less watery ration."

The relative feeding values of skim and butter milks are stated in one case to be as 5:4 and in another as equivalent.

The relative feeding values of maize meal and whole corn were twice determined with results "slightly" in one case and considerably in the other in favour of the meal. Doubt was expressed "whether the gain was equal to the cost of grading." Feeding meal wet gave better results than feeding it dry.

#### *Bee-keeping.*

Trials made during three seasons were held to warrant the following statements:—

No perceptible difference was noted between different sized frames in wintering or building up in the spring.

Double brood chambers for wintering and spring building up did not prove useful.

Stimulative spring feeding proved injurious.

Bees will make use of scrap wax in comb construction during the honey flow.

The periodical removal of all drones and drone brood failed to prevent swarming.

The removal of the queens during honey flow was of no avail.

No difference could be detected by experts in the quality of honey produced under otherwise similar conditions upon different comb foundations. The Weed new process foundation was thought superior.

The honey made by bees fed with cane sugar syrup did not differ materially in composition from that directly adulterated. Such as was made when the bees were fed but 20 pounds a week was somewhat more like normal honey than that made when they took 20 pounds a day. In each case some laevulose (honey sugar) was formed and a trace of acid added.

Feeding back extracted honey for section filling did not succeed well.

Tests made seem to indicate that the winter temperature of the hives may vary without detriment to the bees.

---

#### IV.—DAIRY HUSBANDRY.

---

*Effect of Age on Milk.*—The year records of 99 cows, comprising 427 years of bovine life, were studied to note the effect of advancing age upon milk yield and quality. At the outset and until seven years old, the milk flow tended to increase, the eighth year flow was inclined to be lower than that of the seventh and ninth and to resemble that of the tenth

year. No cause was found nor is stress laid upon this. From the ninth year onwards the trend was downwards. As regards percentages of total solids, fat, and solids-not-fat, in most cases the trend was downwards. It is stated that heifers usually give nearly their lifetime fat content in their first lactation. The effect of advancing years are not important until old age becomes imminent.

*Quality of the Milk of Strippers.*—Stripper milk is richer in fat and solids-not-fat and of a higher specific gravity than the average of the milking period if the cow is in calf. If she goes dry when farrow or when but recently served, the quality is not usually unhandsome.

*Effect of Fatigue on Milk Flow.*—Three trials were made on the effect of fatigue on the milk flow, the cows being driven ten to twelve miles and carried 50 to 70 miles by rail. In the first trial of 25 cows, half gave richer milk the night of their arrival and all richer milk the next morning, than they did two weeks later, the fat being the most variable constituent. The quantity was unfavourably affected. In the second trial it was found that fatigue lessened the flow temporarily; affected its quality seriously for the first one or two milkings, and raised the quality after a little while. On the third trial, six cows, 18 hours *en route* and not milked during this time, showed temporary enrichment of the milk for a day or two. Apparently there was no serious milk shrinkage. It seems safe to conclude as a result of the three trials that fatigue tends to lessen the flow temporarily, and variously to affect the quality for one or two milkings. The folly of testing milk before a cow has become accustomed to her new surroundings is clear.

*Effect on Milk Flow of a Change of Quarters.*—The station herd, having been driven three and a half miles to a new barn, gave the two days following as compared with the two days before the change, 6.5 per cent. more milk solids. The general yield bettered, the general quality lowered.

*Effect of Abortion on the Milk Yield.*—Abortion in the station herd ceased after thorough disinfection with sulphur and plentiful injections of laudanum. There is no conclusive proof that this procedure led to the cessation of the disease. Two different studies with four and six cows led to the statement that abortion entailed: (a) A shrinkage of one-third of the milk yield; (b) a gain of one-tenth in quality; (c) a shrinkage of nearly one-third in butter yield; (d) a more even quality of milk throughout the milking period.

*Effect of Weather on Milk Flow.*—Five tests, covering practically the whole year, and the conditions of pasture, summer soiling and winter barn feeding, pointed directly to the conclusion that the tendency of cows is to give from day to day richer milk when the temperature falls and poorer milk as it rises; or, in other words, the quality of milk (solids and fat) tends to vary inversely to temperature changes.

*Miscellaneous Notes on Butter-Making.*

Buttermilks from cream churned at 57 deg. F. contained 0.4 per cent. fat; at 67 deg. F., 0.52 per cent. fat. A buttermilk drawn from butter granules were very fine tested 0.77 per cent.; when churned to large grains, 0.74 per cent. fat. The initial and final quarts drawn from one churning showed identical tests. Skim-milk drawn from deep setting cans far from and near to cream line showed 0.41 and 0.59 per cent. fat respectively.

Churnings of mixed sweet and ripened creams as compared with separate churnings of each afforded results indicating that in the mixed product each lot of cream churned as if it were churned alone, the resulting loss in the butter-milk being an intermediate. The mixing just before churning of creams of different degrees of ripeness entails loss.

Adding 0.10 per cent. caustic soda to milk hindered creaming and churning and injured the butter.

It is safe to skim deep setting cans down very close to the cream, if carefully done. The middle of the can furnishes average quality of skim-milk.

The milk serum is not influenced by the separator. The only difference between whole milk and the skim-milk derived from it is in the amount of fat it contains.

The skim-milk from a rich milk is usually richer in solids-not-fat than is that from a thin milk.

---

THICKENING UP A THIN STAND OF LUCERNE.—It is sometimes possible and advisable to thicken up a thin stand of newly seeded lucerne by re-seeding. This may best be accomplished by harrowing early in the spring the field which was seeded the previous fall or spring, sowing a little seed, and covering it with the harrow. The earlier this work can be done the better. The difficulty in starting new plants among the elder ones is that the plants which are well started will exhaust the soil moisture and plant food and shade the younger, more feeble plants, often destroying them, especially if a period of dry, unfavourable weather should occur. It is not advisable or practicable to attempt to thicken up a thin stand of lucerne on an old field, since the younger plants, even if they can be started, will hardly survive the season in competition with the old, well-established plants. The old field which has become weedy or full of grass had best be broken and rotated with corn [maize] or other crops for a year or so before re-seeding. In fact, the preferable plan is to seed down other fields, using the lucerne in rotation with corn and other crops, rather than to attempt to keep the same fields in alfalfa continuously.—A. M. TenEyck, Kansas Agricultural Experiment Station.



## ***Agricultural Co-Operation in Germany.***

### PROGRESS DURING RECENT YEARS.

THE annual general meeting of the Imperial Union (*Reichsverband*) of German Agricultural Co-operative Societies was held last July at Mainz, when the twenty-fifth anniversary of the foundation of the Union was also celebrated. There were nearly 2,000 delegates present.

The official address delivered by Dr. Haas, the Director of the *Reichsverband*, as reported by the *Journal* of the Department of Agriculture and Technical Instruction for Ireland, was a valuable and interesting exposition of the history of the Union and of the fundamental principles upon which the work is based.

The organisation in its first year—1883—contained only nine federations and 248 societies, with a total membership of 10,000. To-day, after its amalgamation with the older Raiffeisen Associations, it embraces the grand total of 41 federations, nearly 18,000 societies, and a membership of over 1,500,000. This immense organisation, though it received its first impulse from Raiffeisen and Schulze-Delitsch, is, as the Director pointed out, not the work of one man nor of several men. Its development came, as it was bound to do, from below and not from above, co-operation being essentially impersonal in its nature. The *Reichsverband*, he said, had always pursued a policy of decentralisation, and their first rule of conduct was: "Uniformity in great things, liberty in minor details." The greatest freedom had always been allowed to societies in matters of local administration, but all must be based upon the fundamental principle of organised self-help and solidarity. Dr. Haas dwelt on the moral as well as the material benefits derived from the movement by the rural population and also on the efforts it had cost to teach that population that effective co-operative thought and action must be unselfish thought and action. He dealt with the question of State aid to co-operative organisations, in the shape of subventions and in the shape of credit, which had been made a ground of objection by their opponents. He declared that any State subventions received had been almost exclusively for scientific and propagandist purposes, and only in a few isolated instances had they been applied to defraying the administrative expenses of co-operative organisations, while the credit given by Government banks was not given gratis (though the rate of interest was moderate) and was only equivalent to the advantages given to industry and commerce by State financial institutions. The application of State funds to the promotion of national prosperity through agricultural co-operation he regarded as perfectly legitimate and justifiable. The



ultimate aim of co-operators was independence of all external aid, but State aid had made the rapid extension of agricultural co-operation in all parts of the Empire possible. It would be many years before they could do without it. They were thankful for it, and were able to accept it without derogation to the character of their movement as one essentially founded on self-help. The great Steamship Companies and other industrial and commercial interests received State aid in various forms, and co-operative agriculture was not ashamed of doing the same. Another principle to which the *Reichsverband* had always clung was that the organisation must ever remain a neutral platform on which party politics and religious differences should never find a place; and this rule, Dr. Haas declared, would be adhered to for all time.

#### DEVELOPMENT OF THE CO-OPERATIVE MOVEMENT.

The following figures, taken from the *Journal* of the Irish Department of Agriculture, indicate the growth of the agricultural movement in Germany within recent years:—

The number of agricultural co-operative societies in existence in each of the years 1904-1908 inclusive was—

|                   |                   |
|-------------------|-------------------|
| In 1904 . . . . . | 18,309 societies; |
| „ 1905 . . . . .  | 19,323 „          |
| „ 1906 . . . . .  | 20,128 „          |
| „ 1907 . . . . .  | 20,973 „          |
| „ 1908 . . . . .  | 21,959 „          |

—the average annual increase in the number of societies thus being 900.

The total for 1908 is made up as follows: Credit societies, 14,675; agricultural societies, 2,128; creamery societies, 3,132; various societies, 2,014.

The mutual purchase and use of agricultural machinery is an important branch of co-operative activity and special societies are formed for this purpose. In 1908 the number of such societies in the *Reichsverband* was 223. These were chiefly threshing machine societies, which numbered 185. There were also 10 steam plough societies, and 28 other machine societies. The number of special co-operative machinery societies, however, by no means indicate the number of co-operatively owned agricultural machinery in Germany. In Bavaria alone, in 1902, over 3,000 machines were in co-operative use; these included 683 threshing machines in which 16,052 members had a share.

The working capital of the special co-operative machine societies amounted to £78,341 for 101 societies.

The *Reichsverband* also comprises 46 co-operative electricity supply societies, which provide electricity to their members for light and motive power. In 1906 the 15 electrical societies then in the *Reichsverband* had a working capital of £29,227.

## ***The Meat Industry in Hungary.***

By LOUDON M. DOUGLAS,

*Lecturer on the Meat Industry, Edinburgh.*

SOME time ago a party of English agricultural writers, of whom I had the pleasure of being a member, were invited by His Excellency Mr. Ignatius Daranyi, Minister of Agriculture in Hungary, to visit that country and see its developments, so that they could report through their journals to the English people in how far Hungary had adopted modern ideas in connection with agriculture.

The party arrived at Buda-Pest on September 14th, and left there on September 21th, and during the interval they had the opportunity of seeing the greater part of Hungary. This was no light undertaking, as the Kingdom of Hungary covers an area of some 125,430 square miles, or just 4,000 square miles larger than that of the United Kingdom. With a strong desire, however, to show the visitors everything possible within such a limited period, the arrangements had been made so that scarcely an hour was lost, and there was something fresh to see all the time.

The journey began really at Buda-Pest, in examining some of the notable institutions of that great modern city, and extended through Lake Balaton, where the fishery of that great inland sea was duly examined, as well as the beautiful vineyards which surround its shores. On the 17th of September the party journeyed to Komarom, where they had an opportunity of seeing a large Farmers' School, and also a farm conducted by the Minister of Agriculture and which is known as Dunaors, and where in the unavoidable absence of his Excellency, the party were sumptuously entertained by his brother. From Dunaors they went on to Kisber, where the greatest hospitality was also extended to everyone.

Kisber is one of a number of State stud farms conducted by the Hungarian Government, and where horses are bred for home requirements and also for export. The various farms are Kisber, Babolna, Mezohegyes, Forgaras, and Palanka. These farms contribute amongst them to a really gigantic horse-breeding industry, which is one of the greatest resources of agriculture in the country, and the importance of which may be judged from the fact that horses to the value of £1,166,000 sterling, or thereby, are exported every year.

The cattle of the country present quite different types from those in Western Europe, and the long-horned Hungarian breed is of quite peculiar interest. These cattle are, for the most part, used for draught oxen, as it is quite an unusual thing to use horses for draught purposes. Of late years there has been an attempt made to foster the breed of heavy horses for work on the farms, but very little impression has been made

upon the numbers of cattle used for work. The cattle in the country are divided up into the native Hungarian and imported breeds, and the latter consist of Simmenthaler, Pinzgauer, and Algauer breeds, all of Swiss origin, and they are principally to be found in the elevated and mountainous districts; whereas the white Hungarian cattle are generally found in the Great Hungarian Plain. Hungarian cattle form 22 per cent. of the total numbers in the country, and the others mentioned amount to 78 per cent.

The object in view in cultivating the Swiss breeds is, of course, the production of milk and butter. Unfortunately, however, the production of butter has been sadly neglected in Hungary, and the business is only now being formed into a definite industry by itself. It is quite possible that in a few years' time Hungary may become, as it is entitled to, a very large export butter area.

The Great Hungarian Plain, which is right in the centre of the centre of the country and occupies one-third of its total area, is one continuously level surface, and is devoted to various systems of agriculture, but the fact that long droughts are common has an extremely deterring effect upon agricultural progress. On the hills all round about the plain, and which form a kind of fringe on the frontier of the country, wine growing is conducted to an enormous extent. So much so indeed, that it forms the staple industry of the mountainous districts.

Of crops, the principal is that of wheat, which forms 30.61 per cent. of the total agricultural yield. Next to that is maize, which forms 21.57 per cent., and next again is that of oats, forming 9.00 per cent. Agricultural products such as barley, potatoes, tobacco, and other crops are not cultivated to any great extent.

The number of swine in the country is returned at about 5,000,000, and these, for the most part, consist of the Mangalica breed, and which is only one step removed from the wild boar. The Mangalica pig is a coarse, long haired, ungainly looking animal, and contains about five inches of fat along the back, so that for ordinary purposes to which pigs are put, namely, for bacon curing, this breed is of very little use. It appears, however, that the fat is largely used to replace butter in Hungary, and, in consequence, the perpetuation of this race of swine continues. A year or two ago the Department of Agriculture introduced some 1,200 pigs from England into the country, and these were mostly of the Yorkshire breed. These English pigs have been distributed in various parts of the country, and the results are visible in some districts already. It is hoped that this is only a beginning of an alteration in the breed of pigs, which will ultimately result in their character being entirely changed, and should this be accomplished, there is very little doubt but that Hungary will become a bacon-curing country, as it seems specially adapted to the growing of pigs.



The capital of Hungary is Buda-Pest, and naturally one would expect to find there the most up-to-date markets and abattoirs, and it may be said at once that in these matters Hungary is second to no other country. The markets and abattoirs of Buda-Pest are modern institutions, and they are designed on quite modern lines. In the markets it is noticeable that the cuts of meat are entirely different from any obtained in Western Europe. It is also noticeable that quantities of pork are on sale which are not Hungarian at all, but which, we find, come on a long journey from Servia. It is rather remarkable that this pork arrives in first class condition, and this is due to the fact that it is conveyed in railway wagons fitted as refrigerator cars. The meat itself registers 42 degrees F. and, of course, at that temperature, would keep for a much longer period than seven days. The average price of the whole carcass of a pig, weighing net 180 lbs., is 5d. a lb., so that it cannot be looked upon as being very cheap. Beef and veal are sold at about the same prices as are realised in Smithfield Market.

One of the places of interest visited by the party in Buda-Pest was the abattoirs. These are located just outside the city and are three in number, consisting of the pig abattoir, the horse abattoir, and the cattle and small animals abattoir, and, along with the cattle markets are all enclosed in an area of 50,000 acres set aside for the purpose. In the pig abattoir the number of animals to be handled per day seems to average about 1,000, and all those that were passed for slaughter on the occasion of our visit belonged to the Mangalicza breed. As they are brought into the abattoir yards they are stamped with a number which not only shows on the hair, but it also punctured on to the skin by the number being formed of a number of needle points. These points are, along with the surrounding stamp, pressed upon a pad containing violet marking ink and the impression is made on each animal as it passes—the number used being that of the owner. By this means he can trace his pigs right through the abattoir, as the impression on the skin remains.

All the pigs were very heavy, and the average weight would be 20 stone, or about 280 lbs. dead weight. The slaughtering is not quite so humanely carried out as one would wish, the animals not being stunned, as is now common in most up-to-date abattoirs, nor are they hoisted up to a tract bar to be bled. In so far as the furnishing of the abattoir is concerned, the methods of handling the pigs are pretty much in conformity with our own ideas; the cooling and handling being similar to what we are used to. The cutting up, however, was totally different, and this was due partly to the large blocks of fat which were cut off from each carcass, and which were handled in large pieces. It appears that great numbers of these pieces are salted, there being quite a demand for salted fat. The curing of the meat takes place in the abattoir, and the wet process is the one carried out, but as curing is entirely a primitive



matter in Hungary, it would not compare with the methods of nations which have specialised this department of agriculture. It is noticeable that the number of condemned carcases amounted only to  $1\frac{1}{2}$  per cent. of the whole, and these were paid for out of a common insurance fund, to which every slaughterer of pigs contributed 10d. a pig. The handling of the residues is conducted by a society composed of the pork purveyors of Buda-Pest, and they charge for every pig that is slaughtered the sum of 1s. 8d., and retain the offals entirely. At the end of the financial year the profits derived from the offals are divided *pro rata*, and, as a consequence, the business is conducted in a very satisfactory way to all concerned. It is a system of co-operation which is well worth imitating.

In the horse abattoir some 5,000 horses are handled every year, but these are not specially bred for the purpose of food. The horses are those which have to be destroyed for some fault, and the flesh is sold to poorer people in various forms.

The cattle abattoir is a combination of the booth system and the large hall, so that each slaughterer may have a room for himself if he prefers it, and cares to pay for it. The handling of the carcases, however, is practically the same as in other countries, with this exception that the animals are not stunned, and this particular feature of the business did not commend itself to any of the visitors. The same system of insurance pertains in all the abattoirs, and each animal had to contribute to the common fund.

The cattle mostly seen in the abattoirs were those of the Hungarian breed, and it appeared that they were drawn from the plains after having been draught oxen for some years—there was no rule as to age. They were tall and coarse-looking animals, and range from 16 to 17 hands high at the shoulder. The live weight of many is about 28 to 30 cwts.! It will therefore be seen that the proportions of weight and size are far beyond anything we are familiar with.

The system of meat inspection is very complete, there being veterinary officers at the abattoirs who not only inspect the animals alive, but pass the carcases after they are slaughtered. The same system obtains throughout the whole of Hungary as in Buda-Pest. It appears that every community which has a demand for a large quantity of meat is compelled to erect a slaughter-house in conformity with certain sanitary and veterinary requirements. As a consequence up-to-date abattoirs exist throughout the whole country, and these are under the inspection of qualified veterinary officers. Lately there has been a movement to carry the business of abattoir reform a step further, and in some places an apparatus has been erected for the utilisation of the condemned carcases, so that what is absolutely offensive may be reduced to an innocuous powder within the abattoir gates, and what may be sold freely in the cooked condition is also placed at the disposal of the poorer portion of the public.

On the whole, the visitors were highly impressed with the manner in which the meat trade is conducted in Hungary, and they were gratified to see that in this direction, as in many others, the Hungarian people were well abreast of modern progress.

In so far as the comforts of the journey were concerned, words altogether fail in conveying an idea of the unbounded hospitality which the visitors met with everywhere. The journey was organised by Mr. Nemeth, of the Department of Agriculture, in conjunction with Mr. Bakosi, of the Otthon Club, and these gentlemen were ably assisted by Mr. Pal Bakonyi, who accompanied the party throughout. Many others assisted and contributed in every possible way to the comfort and pleasure of the visitors, who will long retain grateful recollections of the many kindnesses offered to them in Hungary.

---

THE DAIRY INDUSTRY IN QUEENSLAND.—The giant strides the dairying industry is making in Queensland may be gauged by the value of butter exports during the past five years. In 1903 the item was worth £49,804; 1904, £344,943; 1905, £455,863; 1906, £582,326; and 1907, £503,582. There are 13,291 establishments in the Colony engaged in the industry. Of these 1,329 handle milk only, 3,190 are cream extractors, and 8,772 make butter. The quantity of milk handled in 1907 was 60,895,502 gallons, 52,623,129 gallons of which was devoted to the production of butter, 2,666,283 gallons to cheese, and 5,609,090 gallons otherwise consumed, mostly for domestic purposes. Of the 22,789,158 lbs. of butter produced, factories made 20,828,080 lbs., or 91 per cent. The total output showed a slight increase of 42,656 lbs. over the figures for 1906. Although the 1907 season was slightly less favourable than that of 1906, the expansion of the butter industry has been remarkable, especially as regards export. From the figures already quoted, it will be seen that the quantity of butter exported has multiplied some seven or eight times within the past five years. The money now introduced into Queensland in return for butter sent away amounts to upwards of £500,000 each year, and will in all probability be greatly increased at an early date in view of the excellent position now occupied by the Queensland product on the London market. This has been brought about by the system of grading and marking recently introduced under the supervision of the Department of Agriculture. The average declared value of all butter shipped last year was 10d. per lb., the same as in the previous year, but a marked advance on 1904-5 values.

## ***Stripping Sugar Cane.***

### IS IT ADVISABLE?

IN Formosa a peculiar custom of stripping sugar cane has prevailed from a very early period, which, whatever reason be given for it, has resulted in benefit to the plants. One species, Scarlet Cane (so called from its colour) always has its dead leaves stripped a week or two before cutting begins, so as to give a fair appearance of colour to the stalk, and others, such as the "Waxy Cane" and "Bamboo Cane," the natives treat in the same way, with the object of obtaining fuel; but there lies no scientific purpose behind the practice. Planters in Formosa and elsewhere are in favour of the constant removal of all dead leaves for the following reasons:—That the cane ripens earlier and acquires a depth of colour; that such a proceeding deprives noxious insects of a breeding ground; that the cane is provided with the necessary circulation of air and light in and around it; that the withered leaves so removed cover the soil, and so check undue evaporation of moisture, thus benefiting the canes; and that the expense thus incurred in stripping may be more than covered by an increased output of cane.

Some experiments were carried out lately by Mr. T. Murakami, B.Sc., of Formosa, with a view to investigating this problem of stripping, and in an article in a recent issue of the *International Sugar Journal* Mr. Murakami describes his experiments and the results obtained. Each variety plot was divided into two parts, and from one of them all the dead leaves were twice carefully stripped off at intervals of a month, while the other was left untouched, both being subject to the same conditions of cultivation. At the beginning of the milling season, in December, each plot was cut, weighed carefully and the products analysed.

The effects of stripping on the various species, as compared with the unstripped plots, are summarised by the author as follows:—

(1) In each variety of cane the size of stalk was remarkably increased.

(2) With the exception of the *Ancha* (Scarlet Cane) and the *Striped Singapore*, both of them scarlet in colour, the cane stalks were found to be standing much more erect.

(3) In all the varieties except the two Formosan species *Tekucha* (Bamboo Cane) and *Ancha* and probably the *Striped Singapore* (all of which are hard-rind canes), the water content and the rate of absorption of mineral salts were greatly increased and in the juice the purity coefficient was noticeably lowered.

(4) But less sucrose and more glucose are found contained in the juice from stripped canes, except in the case of the *Ancha* and *Tekucha*, in which the effect seems rather the opposite one.

(5) Fibre and other non-sugar organisms are markedly increased and seem to have influenced a decrease in the content of juice.

(6) *Rocha* (Waxy Cane), *Ancha*, and *Striped Singapore* gave a smaller tonnage, but in the other varieties it was increased by stripping, especially in the case of *Tekucha*, where the difference was considerable.

(7) The amount of available sugar in the cane is greater (excepting *Tekucha*), ranging from 500 to 1,220 *kins* (a *kin* is equivalent to 1.32 lbs.) of sugar per *Cho* (2.45 acres)—or 269 lbs. to 653 lbs. per acre.

#### EFFECT OF MANURES.

Would different fertilisers alter these results? In the manurial experiment plots, calcium superphosphate as phosphoric acid, ammonium sulphate as nitrogen, and potassium sulphate as potash were carefully applied, each in excessive quantities. Each plot was further sub-divided into two sections, in one of which the cane was constantly stripped and the dead leaves left to cover the ground till the end of the season, while the other section was left untouched.

Upon comparison with the conclusions obtained in the previous experiments (omitting a few minor modifications and irregularities observed in the complete manurial plot from unaccountable reasons which require further investigation) the results as a whole have verified previous conclusions and have furthermore shown that the effect of stripping canes when different manures are applied is felt most largely in those plots in which phosphoric acid is omitted or nitrogen is heavily present. In such cases the largest crops are found when the canes are stripped; and the least when no potash manure is present. But, on the other hand, the loss of available sugar is surprisingly great.

From another experiment it was found that the juice did not deteriorate much from the retention of the dry leaves but that on the contrary the purity coefficient, sucrose, and consequently available sugar were slightly increased.

#### CONCLUSIONS.

It may be thought unwise and unscientific, Mr. Murakami remarks, to draw general conclusions from only partial investigations carried out in Formosa, which island may differ somewhat in climatic conditions and methods of cultivation from other sugar-producing countries; yet the results thus far might be of some interest and value to the sugar industry as to be worth recapitulating. The conclusions of these experiments are therefore given as follows:—

(1) The decrease in sucrose and the lowering of the purity coefficient and the simultaneous increase in glucose and fibre in the imported canes



when stripped may be interpreted as due to a chemical activity having taken place, non-sucrose having been transformed into sucrose and sucrose into glucose.

(2) This chemical activity may be influenced in the presence of a large amount of salt absorbed along with water.

(3) The fresh food material thus obtained is expended in the growth of the canes, an increase in their weight and size, but strange to say the coloured canes for some mysterious reason are exceptions to this supposition.

(4) A long exposure to the hot sun causes the rind or peel of the stalk to become much harder, especially around the joints, thus increasing the fibre content. This is not, however, the case in the *Formosa* varieties and the *Striped Singapore*, all of which are rather hard in rind and thus resist the absorption of water and salt when the canes are stripped and brought to maturity.

(5) The different kinds of manures do not alter these conclusions except in minor cases chiefly concerned with the nitrogen plot and the complete manure plot.

(6) The juice obtained from all canes from which the dry leaves are not stripped is not inferior in its quality, but on the contrary has a slightly increased sucrose content and coefficient of purity.

---

Highest efficiency and best civilisation are reached by a community when each individual thereof has the largest range of abilities to meet wants and the largest range of wants to be met.

---

**TAINTS IN BUTTER.**—Dirt is often the cause of bad-flavoured butter; but there are certain weeds which grow in the fields, which cows eat, and cause a vile flavour in the milk, and subsequently in the cream and butter. The chief of these are wild garlic, hemlock, tansy, saffron and wild mint. The cure for the first cause mentioned lies in its removal by plenty of "elbow grease" and keeping all utensils scrupulously clean and sweet. Scalding for half an hour at 180 deg. will rid the cream or milk of the taint caused from the plants mentioned. The most effectual cure, however, for taints of any kind in butter is to place the butter in cold storage for one or two months. At the end of this time all traces of the taint will be completely removed.—*Agricultural Gazette* (London).

## **A Year Among the Orchards of Nova Scotia.**

By CECIL H. HOOPER.

*(A Paper Read before the Royal Horticultural Society, London.)*

THE Peninsular of Nova Scotia is situated on the east side of the Dominion of Canada, and south of the entrance of the Gulf of St. Lawrence. The climate here is very pleasant, in spite of a long and rather severe winter. The country is remarkably well supplied with water by its countless little springs and its numerous lakes, as well as by the heavy falls of snow in winter and frequent and heavy showers during the summer months, the latter generally falling at night, leaving the days bright, warm and cloudless. The scenery is beautiful, the abundance of native trees rendering it particularly attractive; the most common of these are spruce, fir, pine, larch, birch, maple, ash, alder and oak. The acacia tree is often seen, and also in some parts the French willow and English elm have been introduced, and thrive well. Nova Scotia is said to have the largest variety of flowers, mosses and ferns of any country; wild eatable berries are also very plentiful; they include strawberries, raspberries, blueberries, huckleberries, blackberries and cranberries.

### THE CORNWALLIS AND ANNAPOLIS VALLEY.

The Cornwallis and Annapolis Valley is the principal fruit-growing district in Nova Scotia.\* It is one continuous valley of about 100 miles in length, and varying in width from 6 to 11 miles, situated between two nearly parallel ranges of hills about 600 feet in height. The North Mountain shelters the valley on the north-west, and from the strong winds off the Bay of Fundy; the South Mountain, which is a little higher, bounds it on the eastern and southern side, and runs N.E. to S.W. In the middle of the valley there is a watershed, the Annapolis River running S.W., the rivers of the Cornwallis District running N.E.

These rivers are small, but owing to the great rise and fall of the tide (60 feet) the salt water runs up far inland, carrying with it enormous deposits of alluvial mud or silt, and allowing ships to go several miles inland.

Near the mouths of the rivers are salt marshes which are overflowed by the tide and grow salt hay, which is eaten by the cattle during

---

\* The fruit belt is however being extended, as owing to the establishment of experimental orchards by the Nova Scotia Government, it has been found that apples can be successfully cultivated in practically any part of the Province.

winter. Higher up are the dyked marsh lands reclaimed from the sea, forming very rich meadow land. Grand Pre, the district rendered famous by the expulsion of the Acadians, lies in the eastern part of the valley, on the shores of the Basin of Minas, across which Cape Blomidon, the termination of the North Mountain, is clearly seen. Owing to the beauty of the country, its historic interest, and the cooler temperature, it attracts many visitors from the United States during the summer months. Apples and plums are grown throughout the valley, and in the centre, near the towns of Middleton, Aylesford, and Berwick, cranberries, raspberries, blackberries, and strawberries are grown, also some peaches and a few grapes; one farm I visited had six acres of strawberries. Most of the soft fruits are sent to Halifax and Boston. In the centre of the valley there is a large area of bog land, which, it has been found, is well adapted to cranberry growing. This industry is rapidly increasing.

The greater part of the valley was originally covered by forest, which has been cleared, save at the foot and sides of the mountains.

#### THE SOIL.

The soil of the valley is partly formed from the disintegration of the Trap Rock of the North Mountain, partly from the syenitic granite of the South Mountain, together with the red loam and coarse-grained sand of the new red sandstone in the valley, which abounds in oxide of iron, lime and gypsum, forming a fertile soil admirably adapted to the cultivation of apples, plums and various fruits, as well as of potatoes, swede turnips, oats, maize, pumpkins, beans, etc. Wheat growing and beef production have lately decreased, owing to the competition of the western provinces, but more attention is now being paid to the rearing of stock by the farmers. The dairying industries are also increasing.

#### THE FARMS.

The farms are, almost without exception, occupied by their owners, most of them small, compared with the average English farms, and still smaller, of course, compared with many farms in the west of Canada and the United States. The labour is largely performed by the farmer and his sons, with but little hired help. The farmhouses and buildings for the most part are neat, comfortable, and give the impression of prosperity; they are almost all constructed of wood, painted white; they are generally situated near the high road, and, as the farms are frequently long and narrow extending often back into the woods and down through the marsh land to the river, the farmhouses are frequently within a quarter of a mile of one another, which enables life there to be of a social nature if desired. Prohibition of intoxicating drinks is rigidly enforced throughout Nova Scotia, with the exception of a few towns; there is consequently very little drunkenness. Roughly speaking, the

area of these farms varies from 20 to 120 acres, about equal parts of grass and arable land, the latter including one to five acres of apple orchard. There are a few farms with as many as 60 or more acres of orchard; but a large proportion of this has been planted within the last ten years, and is not yet in full bearing. Many orchards are 50 years old, and a few apple trees remain which were planted by the French more than 150 years ago. The apple tree certainly thrives here, and the orchards are generally neatly laid out and well cared for; the growth of the trees is more rapid, and they attain a larger size than is common in England. The fruit is usually large, well coloured and abundant, and of pleasant flavour, particularly the Gravenstein. Owing, I suppose, to quicker growth and shorter season, I do not think the flavour generally is quite as nice as that of our best English apples. Although the shape of the trees, the cultivation and the fruit in the best English orchards equal, I think, anything I saw in this valley, the average of the two countries is much in favour of Nova Scotia.

Throughout the valley there is a telephone system which connects railway stations, shops, doctors' dwellings, and many of the farmers' houses. The charge is five pounds for installation, £2 10s. yearly.

On one occasion I sent a cable to England from the sitting-room of the farmer's house in which I was staying, and received one back.

Co-operative cheese and butter factories stud the valley every few miles. These encourage the keeping of dairy cattle, which industry profitably accompanies fruit-growing. The local agricultural societies own pedigree cattle for the improvement of native stock. At Canning, in the Cornwallis Valley, there is a vegetable evaporating factory (Kerr's), which was busy drying vegetables for the soup of the miners at Klondyke. It has in former years fulfilled contracts to the satisfaction of the English Government for naval and military supplies.

#### PRUNING AND TRAINING.

The trees are, as a rule, well shaped, as the farmers begin early in the life of the tree to shape them. They like their trees to have a central leader with the main branches distributed evenly about it. The height of the branches from the ground is regulated so as to allow horse cultivation under them.

It is found by experience that it is best to saw off the branches as close against the trunk as possible. If it is necessary to remove a large limb, they commence by sawing in a short distance from below, upward, in order to avoid splitting the wood and tearing the bark. Large wounds grow over best when the edge is smoothed off with a knife and then covered with some substance to exclude moisture, and thereby prevent decay. Gum shellac dissolved in wood-alcohol is found to be the best substance for this purpose, though white lead paint or grafting wax are both good.



Generally speaking, summer pruning, of which a good deal is done, promotes fruitfulness; winter pruning tends more to wood growth. Pruning in Nova Scotia is chiefly done at the end of winter, whilst snow is still on the ground. When the trees are bursting into bloom is found to be a good time, though the opinion is that pruning may be done any time during the winter without disadvantage to the trees, the discomfort being that of the man who prunes.

In case of a tree being split at the forking of the branches, a hole is bored with an auger right through the tree, at right angles to the split, and the parts are drawn together by an iron screw bolt and nut; which damages a tree less than binding together with a hoop of iron.

Again, on Mr. Ralph Eaton's farm (Kentville), in order to train the young trees to grow upright, in case of the trunk bending, a screw-hook is screwed into the tree, and by means of a wire attaching the hook to a peg in the ground, the tree is drawn into the desired position. These hook-eyes and wires are also used to train the branches into correct position where necessary.

### FERTILIZING OF ORCHARDS.

Rotation in the fertilizers applied to the orchard is recommended as advantageous. For example: stable manure one year, chemical fertilizer another. Farm-yard manure greatly benefits old, neglected orchards requiring nitrogen; but its use should be discontinued where trees run too much to wood and leaf without fruit, and some fertilizer containing potash and phosphate would probably prove more beneficial.

Green manuring or cover cropping is much employed in Nova Scotia to supply vegetable matter.

In Canada, wood ashes are the best possible manure. They are applied at the rate of twenty to forty bushels per acre; those from hardwood being better than those from fir trees. The ashes contain about five to seven per cent. potash, two per cent. phosphoric acid.

As the available supply of farm-yard manure and wood ashes is very limited, commercial fertilizers are largely used; the two in most common use are finely ground bone meal at the rate of five to eight cwts per acre to supply phosphate and nitrogen, and muriate of potash at one to three cwts. per acre to supply potash.

In the adjoining valley of the Gaspereau there is a bone mill, to which farmers take bones to be ground.

Nitrate of soda is not, from what I noticed, much used in the Nova Scotian orchards, save sometimes to give young or old trees increased vigour. Nitrate of soda at 95 to 96 per cent. purity equals 15.6 to 15.8 per cent. of nitrogen.

In a paper on fertilizers for orchards in Nova Scotia, published in *The Farmers' Advocate*, the following ingredients were recommended:—

For small fruits (strawberries, raspberries), per acre: 150 lbs. nitrate of soda, 250 lbs. muriate of potash, 800 lbs. bone meal.

For apple orchards: 100 lbs. nitrate of soda, 200 lbs. muriate of potash, 550 lbs. bone meal.

For orchards with clover: 200 lbs. muriate of potash, 250 lbs. Thomas phosphate (Basic slag).

E. B. Voorhes, of New Jersey Experimental Station, said:

"To provide vegetable matter and to improve the physical quality of poor soils, apply yard manure once in four years, in fall or winter, at the rate of from five to ten tons per acre. To aid in the decomposition of vegetable matter, and to insure a sufficiency of lime as plant food, apply lime at the rate of twenty-five bushels per acre once in five years. To provide, in addition, an abundance of all forms of available plant food at the times needed for the development of the tree and fruit, apply annually chemical fertilizers in the following proportions:—

|                                            |         |
|--------------------------------------------|---------|
| Nitrate of soda . . . . .                  | 100 lb. |
| South Carolina rock superphosphate . . . . | 100 lb. |
| Ground bone . . . . .                      | 200 lb. |
| Muriate of potash . . . . .                | 200 lb. |

"The amounts to be applied depend upon the character of the soils, the kind of fruit and the age and vigour of the tree; these given perhaps mark the minimum. In a number of best orchards the quantities are very much larger than is here indicated, and the larger application is believed by the growers to be proportionately profitable."

Frank T. Shutt, Chief Chemist of the Dominion Experimental Farms, wrote:—

"Assuming the leaves of a full-grown apple tree to weigh 50 lb., and reckoning 40 trees per acre, the manurial value contained in the 2,000 lb. of leaves is equal to—

|                           |           |
|---------------------------|-----------|
| Nitrogen . . . . .        | 17.74 lb. |
| Phosphoric acid . . . . . | 3.88 lb.  |
| Potash . . . . .          | 7.84 lb.  |

The leaves are returned to the soil, but the fruit is exported. This, in the case of an orchard 25 years old, producing 160 barrels per acre—equal to, say, 20,800 lbs. of apples—there is a loss to the soil of approximately—

|                           |          |
|---------------------------|----------|
| Nitrogen . . . . .        | 8.9 lb.  |
| Phosphoric acid . . . . . | 5.3 lb.  |
| Potash . . . . .          | 32.8 lb. |

The following is given as another useful formula for manuring orchards:—

---

|                                                            |             |
|------------------------------------------------------------|-------------|
| Good rotten barn-yard manure, 10-15 tons per acre.         |             |
| Kainit (13 per cent. potash) . . . . .                     | 300-700 lb. |
| Or muriate of potash (50 per cent.                         |             |
| potash) . . . . .                                          | 100-200 lb. |
| Bone meal (fine ground) . . . . .                          | 100-200 lb. |
| (2 to 3 per cent. nitrogen, 22 per cent. phosphoric acid.) |             |
| Or superphosphate . . . . .                                | 125-250 lb. |
| (16 per cent. phosphoric acid.)                            |             |

### ORCHARD TILLAGE.

The apple trees are planted 33 to 40 feet apart; in a few instances with plum trees between, in one direction of the lines.

For the first few years the ground is ploughed deeply (8 inches), in order to break up the soil and encourage the roots to grow down to a sufficient depth to escape injury in the case of drought and to be below the reach of the plough. The whole surface of the orchard is tilled from the beginning. In ploughing the plough is turned partly out when within a few feet of the trees and runs shallower (4 inches deep), as the roots near the butt are closer to the surface; immediately round young trees the surface is generally carefully forked over. Between young trees potatoes are frequently grown, using bone meal and muriate of potash as fertilizer. The deep ploughing needs only to be kept up for a few years in order to establish root growth.

The kind of plough in general use has no wheels, but has a sharp curved mould board, which, although it increases the draft, the difference is more than compensated for by the better condition the soil is left in. The ploughing is done either in the fall or early spring; in Canada fall ploughing is not recommended for clay land as it tends to puddle it and make it become hard and stiff, the frost consequently enters to a greater depth, and root injury may result. In ploughing one aim is to obtain a level surface, thus one year the soil is ploughed from the trees, the next towards them, one year east and west, the following north and south. Most of the farmers whose land run down to the river bank, dig and haul the salt marsh and mud on sleighs during winter and spread it on the orchard land; this is disintegrated by frost and more carefully spread in spring. The mud has a fertilizing value, and also the salt in it probably aids in keeping the land moist. Early tillage saves the moisture accumulated during winter and early spring, and puts the soil into fine condition to warm up and get the trees quickly to work. As thorough cultivation renders plant food available, and is the best conservator of moisture, tillage is begun early by ploughing as soon as the snow has thawed, and the land is sufficiently dry to be worked. Harrowing follows, which stirs the ground thoroughly to the depth of about three inches. This is performed about every two weeks until late in

the summer; the drier the soil the oftener it should be done. The varieties of harrow used include the spring tooth, the spike tooth, the disc and acme. If the wood growth of trees is too luxuriant, it may be checked by lessening the tillage and by withholding nitrogenous manure. As the orchard trees stop growing about midsummer vigorous tillage then ceases, so that the new growth may ripen sufficiently to stand the cold of winter, and as the trees can now spare considerable moisture, catch crops are with advantage sown, such as tares and buckwheat.

(*To be continued.*)

---

## ***The Control of the Meat Supply.***

LECTURE BY PROF. LOUDON M. DOUGLAS.

---

THE fourth lecture of the series which is being given by Professor Loudon M. Douglas (whose name is well known to readers of the *Journal*), at the College of Agriculture, Edinburgh, was delivered on December 14th, the subject being the Control of the Meat Supply.

The lecturer stated that there were 51 markets in Great Britain from which returns for live stock were obtained, and it was curious to note that the numbers of animals presented for sale at these various markets did not vary very much from year to year. Thus in the department of fat cattle alone, the figures for 1906 were 1,032,259, whereas in 1907 they were 1,060,066, it will be seen that the variation was not great. The imports, however, from foreign countries had gone up enormously, and it would appear as if our principal source of meat supply as in other foods was not in the United Kingdom itself. A comparative statement of the total meat imports for the last three decades showed more strikingly than it could be presented in any other way how we depend upon foreign sources of supply. In 1887 the value of the meat imports was £14,350,000, in 1897 the value had increased to £26,825,000, and in 1907 this figure had gone up to £42,000,000, figures which showed a rapidity of increase which was truly gigantic. The figures presented a new set of conditions in the meat trade, and the control of meat from foreign countries would require to be undertaken by our authorities as the principal part of their duties as compared with the inspection of the home supplies.

The lecturer described the methods for the handling of meats in



foreign countries, and illustrated by means of lantern slides the methods of transport and meat inspection in Holland, the United States, the United Kingdom, and elsewhere. He also pointed out the importance of the by-products, which were scientifically treated in foreign abattoirs, and the organisation of this branch of the meat industry had still to be done in so far as the United Kingdom is concerned.

There were three people primarily concerned in the meat supply, namely, the farmer, the meat purveyor, and the consumer. The farmer was the producer of the raw material and was entitled to produce live stock which were free from disease. The principal disease to be dealt with was that of tuberculosis, and there was no doubt that it was perpetuated to some extent in the United Kingdom, because pedigree stock-owners were obliged to test all pedigree stock intended for shipment abroad. Should such stock react to the tuberculin test, the animals were not slaughtered, but were distributed throughout the home herds, thus perpetuating the disease. This was a matter for State intervention, and nothing short of that would effect a cure.

The meat purveyor occupied the position of being the middle man between the farmer and the consumer, and he certainly did not wish to buy tuberculous meat. He was in this position that he could not make use of any ready test which could be applied to cattle in the market place so as to demonstrate whether they were disease free or otherwise. He paid his money with the intention of buying sound animals, and it was unfair that should they turn out to be otherwise he should be at the loss.

The consumer undoubtedly was to be protected both against the farmer and the meat purveyor, and hence our system of veterinary meat inspection, which was being gradually extended.

The various laws governing the meat control in Great Britain were then referred to, as were also the new regulations controlling foreign meats at British ports, and the lecturer pointed out how absurd it was that such regulations should be carried out under the Medical Officer of Health, who was totally unqualified for such an office; the examination of meat was the business of veterinary inspectors, and they only should be appointed to carry out such inspection.

---

Labour is divisible into *operative*, *executive*, and *speculative* labour. Examples of these three categories are, bricklayer, foreman, and architect, respectively. A farmer combines all three categories.

## ***Rubber v. Bark.***

---

### A NEW PROCESS FOR TANNING LEATHER.

---

WE have received, from the Commercial Agent for Natal in London (Mr. Francis Harrison), information respecting a new process which has been invented and patented lately for permeating hides and skins with pure rubber, which it is claimed produces a superior article to bark-tanned leather. It has long been recognised that an immense market would be open for rubber-tanned leather, if only a perfect product could be obtained; but the satisfactory tanning of leather by means of rubber has for many years been regarded as a practical impossibility. The Rubber Tanning Syndicate, Ltd., of Finsbury Pavement House, London, however, considers that the problem has now been satisfactorily solved, as a result of many years of experiment, and we learn that patents have been granted in Great Britain, United States, Canada, Mexico, Argentine, France, Russia, Belgium, Austria, Hungary, Japan, India, Norway, Sweden, Denmark, Italy, Spain, Transvaal, Cape Colony, Australia, and New Zealand.

#### WHAT RUBBER-TANNING MEANS.

The invention consists of a process for permeating hides and skins with pure rubber, the result being what is known as rubber-tanned leather, which is said to possess qualities vastly superior to those of the ordinary bark-tanned leather. Increased life, resiliency, durability, toughness, pliability, softness and water-resisting qualities are imparted in the rubber-tanning process, giving a commercial value to the new product far beyond that of any leather at present known to the market.

In the preparation of ordinary bark-tanned leather the cells of the hide or skin are filled with chemicals, oils and other substances that add considerably to its weight, while the harmful effects produced outweigh any advantages claimed for the process, a rigidity being given to the leather which only remains so long as it is kept dry and in no sense does it become waterproof. In rubber-tanned leather the effect produced is almost entirely the reverse, the principle involved being to cleanse the pores of the skin and to extract therefrom all foreign and superfluous fatty matter, so that the cells may become available for the absorption of the rubber. The result is the production of a material which is practically waterproof, and which, while far more durable than the ordinary commercial leather, is at the same time soft and pliable, qualities which remain one of its distinguishing features even after immersion for lengthened periods in water, and render it available for

the manufacture of many articles for which ordinary leather is wholly unsuitable or unsatisfactory.

#### SOME OF THE ADVANTAGES CLAIMED.

Leather thus treated has been abundantly tested and proved and is suitable for the manufacture of many articles of domestic and commercial use. The toughness and durability, softness and water-resisting qualities which are essential in most of these articles are attained by rubber-tanning; and we understand that the leather can be dyed to any of the colours that are most used. Weight, so detrimental to the essentials of the product, is avoided, whilst a much greater superficial area, weight for weight—a most important consideration for buyers in bulk—is obtained, rubber-tanned leather in most cases giving almost double area, pound for pound, as compared with ordinary bark-tanned leather, whilst its durability is enormously increased.

Another advantage claimed is the toughening and strengthening of sheep skins and the poorer portions of bullocks' hides, such as the flank, neck and shoulders. The pores of these parts of the skin being large, the rubber penetrates more freely and enables such parts, which at present detract from the value of the skin, to be utilised by reason of the increased strength and substance given to them by this process. Such poorer portions of hides and skins are, in fact, rendered by the rubber-tanning process as durable as the best portions of bark-tanned leather, and their value very largely increased.

An important factor in the case of rubber-tanned leather, as compared with bark-tanned leather, is the very short period of time required to produce the former, the result being that there is no locking up for lengthy periods, as in the case of bark-tanned leather, of large amounts of capital represented by stocks in process; while bark-tanning requires anything from 5 to 12 months, the rubber-tanning process occupies at the outside from 5 to 7 weeks only.

#### A MATTER TO BE WATCHED.

Such is the principle of the process and such are the chief advantages claimed for rubber-tanned as compared with bark-tanned leather. This is a matter which very evidently concerns wattle-growers, since, if a large company is formed, as the inventors of the process hope will be the case, the consumption of wattle bark will be more or less adversely affected in the years to come. Mr. Harrison accordingly intends keeping the Colony informed as to what progress is made in the flotation of a company and the manufacture of rubber-tanned leather on a commercial scale; but for the present he states, as pointed out by the Director of the Imperial Institute—with whom he has been in correspondence on the subject—that the matter is only in the initial stage at present and that it would consequently be premature to take any action in Natal.

## **Export of Apples.**

### AMERICAN AND AUSTRALIAN METHODS.

IN a note in our last issue we referred to the possibilities which the Colony possesses in the direction of building up an export trade in apples, and we gave lists of the chief varieties which are shipped to England from Tasmania and Australia, the information having been furnished by the Commercial Agent (Mr. Francis Harrison). Mr. Harrison has now sent some further interesting details regarding the export of apples from Canada, the United States, Australia and Tasmania, together with useful information regarding the British markets, prices realised thereon, etc.

#### CHIEF VARIETIES SHIPPED TO ENGLAND.

Mr. Harrison first gives us lists of the chief varieties shipped from the principal exporting countries mentioned above, indicating the varieties which find most favour in the British markets. They are as follows:—

*From Canada.*—Rome Beauty, Salome, Ribston Pippin, King of Tompkins County\*, Wealthy, Grimes Golden Pippin\*, Spitzenburg\*, Jonathan\*, Baldwin\*, Northern Spy\*, Newton Pippin\*, Nonsuch, Nonpareil, Stark\*, Russet, Golden Russet\* (must not be coarse), Greening\*, Ben Davis (not recommended), Belle Flem (not recommended), Blenheim\*. The varieties marked with an asterisk are the favourites on the British market for quality, sale, and good carrying properties.

*From Tasmania, S. Australia, and Victoria.*—Ribston Pippin\*, London Pippin, Strawberry Pippin, Cox's Orange Pippin\*, New York Pippin, Sturmer, French Crab, Adam Pearmain\*, Scarlet Pearmain, Scarlet Nonpareil\*, Wellington\*, Blenheim\*, Cleopatra\*, Rome Beauty, Jonathan\*, Bismark, Dunn's Seedling\*, Monroe's Favourite\*. All these varieties carry well: those recommended for best sale are marked with an asterisk.

*United States.*—From California and Oregon: Newton Pippin. From Washington State (now entering the market): Winter Banana, Baldwin, Jonathan, Spitzenburg, Arkansas Black, Delicious, Hoover, Winesap, Northern Spy, Delaware Red.

#### VARIETIES RECOMMENDED.

If a smaller selection of the varieties marked as especially suitable for export be desired, it is recommended that for good carrying, prices, and free demand, the following may be grown with safety:—Newton Pippin, Cox's Orange Pippin, Jonathan, Baldwin, Cleopatra and Spitzenburg.



## PRICES.

The following statement supplied by the Commercial Agent gives an idea of the range of prices during the season:—

Nova Scotia and Ontario: per barrel of about 3 bushels—10s. to 21s.

British Columbia: per box of one bushel—6s. to 12s.

Tasmania and Australia: per box of one bushel—6s. to 11s.

U.S.A. (California and Oregon): per box of one bushel—6s. to 14s.; per barrel of about 3 bushels—10s. to 21s.

U.S.A. (Washington State): per box of one bushel—8s. to 15s.

The apple industry in Canada and U.S.A. is being very greatly extended, and with the larger export expected in the future prices will automatically decline, but not unremuneratively.

## GRADING AND PACKING.

The grades and packages in use are as follows:—

*Nova Scotia and Ontario.*—In barrels with 120 to 140 lbs. of apples—approximately three bushels. Two grades.

*British Columbia.*—In standard bushel box defined by Act: 10 inches deep by 11 inches wide and 20 inches long. Packed in tiers,  $3\frac{1}{2}$ , 4, and  $4\frac{1}{2}$ , according to size, and containing 40 to 45 lbs. apples or 60 to 130 fruits.

*U.S.A.*—In barrels and boxes. Similar grading and packing to foregoing.

*Tasmania and Australia.*—In boxes only: 15 inches deep by 10 inches wide and 20 inches long. Graded. Medium-sized apples only exported.

Barrels, where used, are becoming obsolete, boxes taking their place, except for commoner qualities.

*Methods of Picking and Packing.*

Mr. Harrison sends the following hints which he has gleaned from authorities:—

Use a ladder fairly broad at base narrowing to a point. Use a basket round in shape with swing handle holding little more than a peck. Empty the fruit *gently* into barrels and remove to sorting shed. Pour apples on to a table, say, 5 feet long by 3 feet wide with ledge all round, 4 to 5 inches high, covered with felt or sacking.

Sort into grades required. Then invert the box so that the packing commences *from the top*. Line the box with thin, white paper, place a layer of corrugated paper in the bottom (or the top, as it will be when finished), wrap each apple in paper, and place evenly and *firmly* in rows. When one tier is finished place a layer of thick board paper, and so on until the last tier, then put a layer of corrugated paper and nail down the bottom. By adopting this method, which has been well proved, bruising will be prevented. Some packers even place the corrugated paper around the sides as well.

Girls are employed as packers in Ontario and each packs as many as 80 boxes in a day of ten hours.

*Wood Used for Boxes, and Branding.*

The Tasmanian cases are made of well-seasoned Eucalyptus wood somewhat roughly made but strong and true to size. The sides are frequently made of two pieces of wood with a one-inch air space in the middle.

The ends of the boxes require to be marked clearly with the brand of the shipper, his initials or name, and the variety and number of tiers of his fruit—either by label pasted on or by being burnt into the wood.

*Temperature at Which Carried.*

Canadian and United States apples are carried at a temperature of from 32 degrees to 40 degrees; Tasmanian apples at about 40 degrees.

It is recommended, as the result of long experience, that an *even* temperature should be maintained, and that on no account should it be allowed to drop below freezing point or go above 40 degrees. *Nothing is worse for apples than variations of temperature.* Thirty-four degrees is a very good temperature to adopt.

If the apples are long in transit by rail in hot weather, refrigeration vans are used at a temperature corresponding to that in the boat—say, 33 to 35 degrees.

The Californian and British Columbian apples travel some 6,000 miles from the packing house to the British market.

MISCELLANEOUS NOTES.

The chief markets in the United Kingdom are London, Liverpool, Manchester and Glasgow.

Canada and the United States export from the end of September to March; Tasmania and Australia from the beginning of April till the end of June; England from the end of July to January.

CO-OPERATIVE ASSOCIATIONS.—Recent years have witnessed an active movement on the part of growers in Ontario, Canada, in the direction of organisation for the packing and marketing of their fruit. This movement has been particularly effective in increasing the profits derived by the ordinary farmer, who is not a fruit-grower, from his apple orchard. About thirty such associations exist in the Province. The members deliver their apples to a central packing house, where they are packed and disposed of and the profits divided. Where associations exist farmers are taking a much greater interest in orchard management, the possibilities of profit, where the crop is handled collectively instead of by the individual, having been demonstrated. Spraying materials, barrels, packages, etc., are purchased at wholesale rates through the association, and better terms are made for disposing of the output.

## ***Stock Branding in South Africa.***

### A PLEA FOR A UNIFORM SYSTEM.

THE Inspector of Brands of the Transvaal (Mr. J. J. Pienaar) delivered an interesting lecture at the recent Congress of the Inter-Colonial Agricultural Union, on "A South African Uniform System of Branding." In the course of his lecture he said that his main object in putting this matter before them was to point out the necessity of unification in matters pertaining to this particular branch of the animal industry, and, as there was no capital concerned in this unification scheme, he anticipated no difficulty.

An inter-colonial system of branding was a new departure in the agricultural history of South Africa, and, as they were aware, innovations in South Africa were always scrutinised with intense suspicion, but in this matter he feared neither suspicion nor criticism; for co-operation in this direction was something tangible to strive for. Much time was devoted to this subject, and he entertained most sanguine expectations that if the present system be adopted throughout South Africa, it would meet the views and command the support of every stock-farmer. If it was intended that the branding laws of South Africa should have the desired effect, then they should no longer remain isolated, but reciprocally aid each other in the recovery of lost or stolen stock and the discovery of stock thieves. Their first duty was to endeavour to prevent the allocation of identical brands by the five States concerned; for if each State registered brands without having regard to the brands allotted by its sister States it naturally followed that at least five owners throughout South Africa would have identical brands, and this practice would lead to endless confusion and give rise to so many difficulties, that, although registered, a brand would lose its importance. They wanted to increase the advantages of branding, not to destroy them. Some young folk were of opinion that since their forefathers taught the savages of South Africa the law of equity, they were no longer exposed to the dangers of stock theft, but arguments like those fell to the ground when they considered that during last year stock to the value of £30,000 was stolen in one of their Colonies—one which had not yet revived from a severe blow. Two-thirds of the stolen stock had, however, been recovered, but one-third, valued about £10,000, was not recovered. He was told by the authorities that the efforts made to recover them were frustrated by difficulties attributable to the fact that most of the animals bore no marks by which they could be readily identified. The native thief was not such a dangerous character, but that new man, who was

familiar with the art of faking brands, etc., was the one against whom they should take decisive action.

After dealing with the history of branding, Mr. Pienaar proceeded to say that the prime object of a branding law was to facilitate identification, and to do this it was necessary to prevent the use of two or more identical brands standing registered in the names of different owners. That meant that when an owner had registered a brand he must be protected in its exclusive use. In this way it facilitated identification and they were placed in a position to trace stray or stolen stock. Promiscuous brands meant that anyone could register what brand he pleased so long as it was not identical in design to one already registered. The result of such haphazard measures was that when the more simple characters had been registered they were saddled with such disfiguring marks as flower-pots, frying-pans, gridirons, etc. The greatest drawback of such a method was that nearly every brand could be faked without the least difficulty on the part of the duffer. For instance, J. Fourie registers J., J. Fraser again registers "J.F." while J. Fouche registered "J.F.1." What is to prevent Fraser from taking Fourie's brand by adding the "F" thereto, and thus make it "J.F.," Fraser's registered brand. Fouche again if dishonest could steal cattle from both Fourie and Fraser, and by adding "F. 1" to Fourie's brand and the numeral 1 to Fraser's brand, the animals would bear Fouche's brand, J.F. 1. The greatest danger, however, was the frying-pan and gridiron. The owner of such a brand simply placed it over the brand of another owner with the result that the rightful owner's brand was obliterated while the dishonest owner's brand stood very prominent. Those promiscuous brands had done more harm in the way of alienating ownership, and in some instances legitimising stock theft, than many other causes. He had no doubt that speculators of questionable repute would sooner or later avail themselves of flower-pot brands and thereby enrich themselves with the stray stock of honest farmers. He was told that in some of the States of America, the faking of brands was nothing unusual. The Australian Colonies had also suffered considerably under the same evil, and he was sorry to say that some of our law courts had also been patronised with cases of this description, and he believed in one case the owner failed to prove that his brand had been faked. Another objection against symbolic brands was that they could not be readily indexed, and to look for an unknown symbol in a brand's directory containing twenty thousand registered brands involved a little more time and labour than some might think.

A matter of first consideration in framing a branding law was the brand. It must be simple and consist of known characters, so as to avoid any possible difficulty in finding it in a brand's directory or in describing it in a telegram. To have such plain brands it was necessary



to adhere to the alphabet; but this consisted of only twenty-six letters, while they must have a supply of about forty to fifty thousand distinctive brands for each South African State, and they should endeavour to eschew the brands of one State clashing with that of another, nor should any registered brand admit of being altered so as to represent another registered brand.

Mr. Pienaar next referred to what had been done in Australia. Continuing, he said the three-piece system had proved itself in the Transvaal, and he would therefore recommend that it be adopted as a South African system, sub-divided into various branches. This system was so named on account of every brand consisting of three characters. By the adoption of this uniform system of brands, no brand of one owner could be altered by adding to it one or more characters, so as to make it represent the registered brand of another owner. There were various three-piece systems. As an example, he would select the one in use in the Transvaal Colony. In the Transvaal the brand consisted of two letters of the alphabet, except "I" and "O," which were exclusively used as numerals—and one numeral. With these twenty-four letters and the ten numerals, 0—9, they had more brands than they required for their Colony, and none of these brands were interchangeable. (The two letters and the numeral were of plain and uniform pattern, and placed in an even and regular line.) The first of the letters denoted the Magisterial district in which the brand was to be used. For instance, a Potchefstroom brand A1 would be PA 1, Pretoria AA1, Piet Retief FA1, etc. Here the P, A, and F denote the district in which the brand was to be used. The advantages to be derived from the dominant letter were of a threefold nature:—(1) It served to simplify the administration of the law. By the district letter a separate set of brands was secured for each district. The first of the two letters indicating the Magisterial district in which the brand was to be used, placed the Magistrate in a position to register any of the brands standing vacant in his district without fear that the Magistrate of any other district would register a similar brand. There were twenty-two districts in the Transvaal Colony, and the Magistrate of each district was doing his share towards the administration of the law; consequently they had a cheap administration. (2) It facilitated identification. For instance, if cattle were moved or strayed from one district into another, anyone in that other district would know at a glance to which district the animals belonged, and by referring to the brand directory he knew the name and address of their owners, and (3) it enabled the authorities to control the movements of stock and to prevent illicit movements of cattle from infected areas. This they admitted was an indispensable feature while they were subjected to so many stock diseases. Never in the history of South Africa was there a disease so terrible and so devastating as the East

Coast Fever, yet with the combined efforts of the veterinary staff and the farmers, it had been prevented from spreading over every inch of ground. All possible measures were adopted to control the movements of cattle. Fences were erected and a system of permits was introduced under the most stringent regulations, yet the disease, although much frustrated in its progress, gained a footing. At last it was recognised that even where the regulations were most rigidly applied, illegal movements continued to take place. Then a happy note was struck, and that was that some means be adopted whereby cattle could be identified. Recourse was taken to the Brands Ordinance. All the cattle in the Zoutpansberg district were branded, with the result that they were now able to trace all illegal movements. Immediately after branding operations were begun the demand for permits to move cattle became greater, and a large number of illegal animals were being traced. This was a clear indication that prior to branding many movements were being carried out without permits. The scheme was being carried out as follows:—In the case of natives, a brand was allotted to each farm on which there were native-owned cattle, and registered in the name of the natives. A branding supervisor was appointed to conduct the branding, and as soon as branding had been completed on a farm the branding iron was sent to the nearest fieldcornet or sub-native commissioner for safe custody. Under these circumstances, if cattle be moved from one farm to another the strange cattle could be identified at a glance. Again, if they were moved into another district, anyone seeing the cattle there would know by the district letter from which district they were removed, and should it be a quarantined district, he was compelled to report the matter to the authorities. The other letter in the brand might be selected by the applicant, and under this system they were in a position to give him whatever he wanted. For instance, "A" might register AA1, "B" AA2, "C" AA3, etc. Since the discovery of the three-piece system the thief had found another way of faking brands, and this was much more scientific than the manner of faking already illustrated, *i.e.*, to fake one of the letters in the brand. For instance, if the dishonest person registered the brand AG1 and another wealthy farmer's brand is AC1, he alters this AC1 into AG1. It was gratifying to be able to say that so far they had scored in their endeavours to prevent the faking of brands. The three-piece system had proved itself in other parts, and he would recommend that it be adopted as a South African system. It was simple, yet practical, and would, it was hoped, receive the support of every South African farmer, for such a system would sweep away many of the difficulties with which the South African farmer had to contend. He had wrought out a separate three-piece system for each colony. The characters comprising the brands in each system were so designed as to enable anyone to notice at a glance to which Colony the

brand belonged. In this way they were able to identify strange stock, and where a certain Colony was infected with contagious diseases, and in consequence thereof placed under quarantine, all the adjacent Colonies would be safeguarded by the brands.

By the adoption of such a scheme every farmer, in fact every inhabitant, of South Africa would become a competent inspector of brands, absolute control was exercised over movements of stock, and under these circumstances stock-theft would cease to be carried on in such an elaborate manner as at present, and the diseases would not spread so freely from farm to farm, from district to district, and finally from Colony to Colony.

---

HOW TO MAKE A WAX EXTRACTOR.—A correspondent writes as follows to *Farm, Field and Fireside*:—The best wax extractor is in the form of saucepan and steamer. My own, which I will describe as a guide, has the lower or saucepan part, in which the water is boiled to produce steam, six inches in depth. The upper part is twelve inches deep. Both are twelve inches in diameter. Fitted near the bottom of the upper portion is a plate or dish, which reaches the side all round within a quarter of an inch. It is fixed to the sides by three strips of tin, soldered to the dish and to the side of the steamer. Thus it will be seen the steam from the lower chamber can pass into the upper chamber. The wax or comb receptacle is a cylinder of perforated tin, eleven inches in diameter. This is placed upon the dish, which, when fixed, must be slightly raised on one side, and from the lower side out through the side of the steamer must pass a little spout, with three-eighths opening, and extending outwards in a slightly slanting direction, three or four inches. To keep the perforated tin wax chamber level a slight leg must be put on the bottom a little distance away from the spout. These may be placed on the dish or on the bottom of the wax basket. As the latter would not always be put in carefully, they had better be fixed to the former, then there could be no mistake, and the wax chamber would always be level, in spite of the slant given to the dish upon which it stands when filled with combs or pieces of wax. To work the extractor, nearly fill the lower vessel with water, and set the whole affair on the top of a stove. Place a bowl containing a little water at the side, with one edge just under the spout. When the upper chamber fills with steam the wax will be melted, and, passing through the perforations, will fall upon the dish and thence pass through the spout to the bowl placed to receive it. In order to ensure the wax being perfectly freed from all foreign matter and bits, make a flannel bag to fit inside the comb basket, and perfectly clear and clean wax will flow into the bowl.



## ***The Wool Trade in 1908.***

### AN INTERESTING REVIEW.

THE wool trade of 1908 is reviewed in a most interesting manner in the Colonial Wool Circular, issued by Messrs. Charles Balme & Co. It is stated that business in the wool trade has been conducted under circumstances of exceptional difficulty during the past year, owing to the rapid contraction in consumption brought about by the banking crisis in America towards the close of 1907. The monetary stringency then prevalent all over the world checked business, and manufacturers, who had been fully employed up to the end of the year, found it increasingly difficult to obtain new orders. This state of affairs naturally led to a sharp fall in values of both merino and crossbred wools. The decline, moreover, was intensified by the large commitments in the overseas markets entered into by dealers, spinners and manufacturers, who, misled by the active condition of business in the various European manufacturing centres, had ignored the probable effect of the American crisis, and later on found themselves burdened with large quantities of dear wool, the liquidation of which involved very heavy loss. In these circumstances, the position in the trade had become so serious by May that exceptional measures had to be adopted to steady the market and prevent a collapse; consequently, prior to the opening of the third series, holders in London decided to take some 80,000 bales off the market, the quantity actually held over from these auctions reaching the huge total of 120,000 bales. From this point the trade entered on a period of recuperation, prices for all classes of wool remaining fairly steady for the next few months, which enabled the stock held in London to be gradually reduced. By November, business in America showed signs of revival, which became more pronounced after the Presidential election early in that month. This improvement caused a considerable demand for all classes of wool suitable for shipment to the States, which at once gave a tone to the market and led to a general rise in values, the trade realising that during the depression prevalent earlier in the year they had allowed their reserves of the raw material to run down to a lower level than was prudent now that the tide had apparently turned and that a recovery of business seemed imminent.

The course of events during the past twelve months has thus brought out prominently two points: (1) The closeness of business relations between the old world and the new, the fall in wool values being clearly the result of the American crisis of 1907, while the improvement which has recently taken place has also emanated from the same source; and (2) the narrowness of the margin at the present time between the world's wool production and the requirements of machinery, which is



proved by the fact that, notwithstanding all the adverse influences which have depressed the industry during the greater part of the past year, the whole of the season's production has eventually been absorbed, the quantity carried forward in London to 1909 being 4,000 bales less than the total brought into last year.

Although quotations for tops, more particularly those made from the coarser qualities of crossbred wool, were depressed by forced sales in the manufacturing districts towards the end of 1907, the easier phase of the money market noticeable at the turn of the year caused some improvement in the position of the various classes of staple, which was well maintained up to the opening of the January auctions. During their currency, competition was more active than at the preceding series, but prices generally ruled in buyers' favour. Among merinos the depreciation ranged from par to 5 per cent., the fall being most noticeable on inferior grades. The finest qualities of crossbreds sold readily at previous rates; demand for the coarser growths, however, was somewhat restricted, values for medium sorts declining  $12\frac{1}{2}$  per cent., and coarse 10 per cent. South African greasies of good length and condition, as well as scoured, realised December parity, but short-stapled and inferior greasies were about 5 per cent. cheaper.

The result of the year's operations has thus been to establish a general fall in quotations, amounting to  $7\frac{1}{2}$  per cent. on merinos, 10 per cent. on fine crossbreds,  $7\frac{1}{2}$  per cent. on medium crossbreds,  $17\frac{1}{2}$  per cent. on coarse crossbreds,  $7\frac{1}{2}$  per cent. on Cape greasies, and  $17\frac{1}{2}$  per cent. on Cape snow-whites.

The exports of semi-manufactured goods from December, 1907, to November, 1908, were £8,436,723 in value, as compared with £11,035,370 in 1906-7 and £10,057,102 in 1905-6. The exports of manufactured goods amounted in value to £19,159,320 from December, 1907, to November, 1908, as compared with £22,080,037 in 1906-7 and £20,595,655 in 1905-6. These figures vividly illustrate the extent to which the shrinkage in the export trade in consequence of the strained monetary position at the close of 1907 has intensified the depression which has prevailed in the wool trade during the period under review. Quantities as well as values have fallen off heavily, the decrease in the latter amounting to over 16 per cent. as compared with the satisfactory returns for the corresponding months of 1906-7. An analysis of the destination of the various exports reveals a substantial increase in the shipments of tissues to Argentina and Australasia, but a large diminution in those to Canada, Chili, and the Far East, while, of course, there has been marked reduction in the volume of business with the United States of America.

The value of the nett imports for the period December, 1907, to November, 1908, was £8,425,158, as compared with £9,763,728 in 1906-7 and £11,055,534 in 1905-6.

A table giving the supply and distribution of Colonial wool to Europe and North America shows the exports from Australasia to have risen from 1,118,000 bales in 1906 to 1,338,000 bales in 1907, and again to 1,413,000 bales in 1908. From Natal there has been a steady increase—30,800 bales in 1906, 46,000 bales in 1907, 55,500 bales in 1908. From South Africa (including the small Natal totals) the exports have been: 1906, 196,000 bales; 1907, 245,000 bales; 1908, 228,000 bales. The shipments direct from Colonial ports to the Continent were: 1906, 728,000 bales; 1907, 760,000 bales; 1908, 695,000 bales. To the United States: 1906, 28,000 bales; 1907, 47,000 bales; 1908, 10,000 bales. Total supply: 1906, 2,072,000 bales; 1907, 2,392,000 bales; 1908, 2,360,000 bales. The distribution of the wool was as follows: Home trade purchases, 1906, 751,000 bales; 1907, 858,000 bales; 1908, 908,000 bales. Continental purchases, 1906, 1,218,000 bales; 1907, 1,370,000 bales; 1908, 1,348,000 bales. United States purchases: 1906, 101,000 bales; 1907, 150,000 bales; 1908, 94,000 bales.

The total Colonial exports of wool, including shipments to India, China, and Japan for the past three years compare as follow: 1906, Australasian, 1,841,000 bales; South African, 240,000 bales; 1907, Australasian, 2,140,000 bales; South African, 287,000 bales; 1908, Australasian, 2,084,000 bales; South African, 275,000 bales.

From the River Plate shipments of wool were distributed thus: 1906-7, Continent, 394,000 bales; England, 52,000 bales; United States, 25,000 bales; 1907-8, Continent, 402,000 bales; England, 54,000 bales; United States, 23,000 bales.

Advices from the various countries of production do not indicate the probability of any great change in the volume of supplies available for the trade during the current year. In Australia, climate conditions have varied, as is only natural in so vast a continent; in Queensland and South Australia the weather has been favourable for sheep rearing, and a considerable increase in the shipments from the former State appears probable, while, on the other hand, the export from New South Wales is not likely to reach last year's figures, as drought has been experienced in many parts, notably the important Riverina district; some portions of Victoria have also suffered from a deficient rainfall. Taken as a whole, however, it does not seem likely that the Australian output this season will show any material decrease compared with the 1907-8 clip. Turning to South Africa, where the season has been favourable and the flocks are multiplying rapidly, reports suggest an increase in the shipments; reliable information, however, is not available as to the size of the increment, which in all probability will not exceed 20,000 or 30,000 bales. Severe snowstorms in the South Island of New Zealand during July caused a good deal of damage among the flocks in the mountainous districts; in other parts, however, as well as in the North Island,

the season has been propitious, so that some increase in the wool production of the Dominion must be reckoned with. The exports from South America have been more or less stationary for some years past, and although during 1908 conditions have been favourable, no expansion in the output is expected, the continually increasing demand for agricultural land, as well as the requirements of the meat works, having tended to prevent any material growth in the size of the flocks in that part of the world.

The outlook for the new year appears fairly encouraging. The American crisis has become practically a thing of the past, and under the benign influence of cheap money, trade in that country as well as in Europe and the East shows a tendency to revive, which augurs well for the future. In any case, the course of events in the wool trade during the past year has clearly shown that, even in times of depression, the world's production of the raw material is not in excess of the requirements of machinery, consequently, with a more or less stationary supply, any expansion in demand would soon lead to a higher range of values for both merino and cross-bred staple.

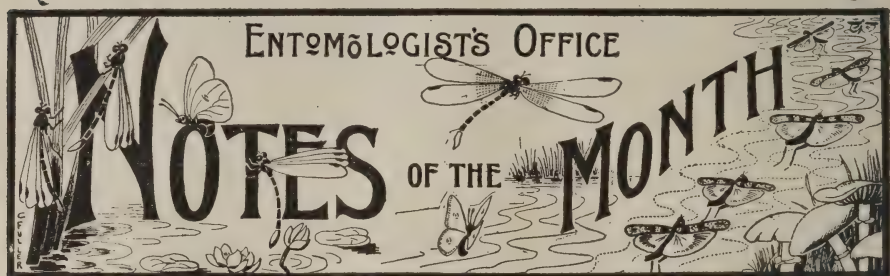
#### SHEEPSKINS.

Although quotations had been much reduced during the concluding months of 1907, fellmongers experienced considerable difficulty in dealing with their products during the first half of the past year, as, in addition to the rapid fall in wool values, roans were almost unsaleable, the American market being practically closed to them owing to the effects of the recent financial crisis. In addition to these unfavourable factors, the supplies dealt with at public auction have been unprecedentedly large, the embarrassment caused by the decline in wool prices not only hampering the operations of local fellmongers in Australia but also checking c.i.f. sales. During the latter part of the year, however, the more favourable position and prospects of wool, as well as an improvement in the demand for roans, enabled buyers to readily absorb the large quantities placed upon the market, the catalogues at the final sales being cleared at an all-round improvement in quotations.

The result of the fluctuations has been a general reduction in values. Among merino skins, quotations for full-woolled sorts now stand 10 per cent., half-woolled  $7\frac{1}{2}$  per cent., and pelts  $12\frac{1}{2}$  per cent. lower than at the end of 1907, while in the case of cross-breds, fine full-woolled descriptions are 10 per cent., and all other classes  $12\frac{1}{2}$  per cent. cheaper. On lambskins the decline amounts to  $17\frac{1}{2}$  per cent.

The quantities catalogued in London during 1908 amounted to 90,911 bales, as compared with 59,200 bales in 1907. The imports into London for the same periods were:—1908, Australasian, 62,879 bales; South African, 64,373 bales; 1907, Australasian, 54,904 bales; South African, 54,906 bales.





## ***The English Sparrow.***

By CLAUDE FULLER.

It is now four years ago since I drew attention to the presence and increasing abundance of English Sparrows in and about the City of Durban.

During those four years the Sparrows has not increased to an alarming extent, but there is every evidence of a steady progressive increase which will in time no doubt involve Natal, and, more seriously, the Orange River Colony, Basutoland and the Transvaal.

To-day holiday makers may see Sparrows on the Beach at Durban, and in every part of the town they proclaim their presence with discordant chatter, whereas four years ago one had to look out for them in the several centres where they had established nests.

The following is reprinted from my annual report for the year 1903-4:—

### **THE ENGLISH, OR HOUSE SPARROW.**

*Passer domesticus*, Linn.

The presence of this pestiferous bird in Durban, and the certain indications of its increase since April, 1902, when Mr. J. D. S. Woodward called attention to it, are sufficient reasons for introducing some notice of the bird into this report. Apart from that, since I have become acquainted with its establishment at the Port, I have considered it my bounden duty to urge its extermination upon all and sundry; but the Sparrow is receiving the same apathetic attention here that it has received elsewhere whilst it is establishing itself in a new field and under fresh conditions and circumstances.

The circumstances of its introduction are similar to other cases, and can only be described as "the mistaken enthusiasm for things English." I gather that a few birds were imported by a gentleman in Durban some six years ago. These he kept in captivity for some



time, and then, because their chattering was such a nuisance, they were turned at large.

The situation at present is this: The English Sparrow, which must be classed amongst the worst of vermin, is now established in Durban, but so far does not extend to the rest of British South Africa. Nothing to control its increase and spread is being done, and the question is whether we in Natal are to sit idle and allow the pest not only to become a nuisance to ourselves but a menace to the rest of the Colonies.

I know there are arguments against the extermination and destruction of Sparrows. They are all the same and have been used over and over again, but they are the platitudes of senseless and ignorant or unobservant people. The case for and against the bird has been fought out again and again. It has been argued before Select Committees of the House of Commons and before those of colonial legislatures. It has been argued by many scientific men in many lands, and in every case the weight of evidence has been against the Sparrow, and the verdicts such as to warrant this Colony in taking every measure to suppress the birds altogether, at once and at any cost.

Some of the arguments which were originally advanced appeared sensible, and were based on the fact that for a few weeks the nestlings are fed upon insects. But hundreds of investigations by practical and by scientific men proved that these were vain; they found that the good done in this direction by the Sparrow was infinitesimal in comparison to the harm. Of the arguments which have been advanced in Natal, I need say nothing.

It is sufficient to say that the Sparrow is a bird which flourishes from the heated tropics to the frozen Arctic regions.

#### DESCRIPTIVE.

Most of us who have been beyond the broad lands of South Africa know sufficiently well the English, or house sparrow (*Passer domesticus*), but for the information of those who have not the following is submitted:—Adult male: length, 6 inches; wing, 3 inches; bill, bluish-black; legs, pale brown; the spaces between the eyes and the bill, black; a narrow streak of white over each eye; crown, nape, and lower back, ash-grey; region of the ear coverts, chestnut; back, chestnut brown streaked with black; wings, brown, with a bar of white on the middle coverts; tail, dull brown; throat and breast, black, sometimes suffused with bright chestnut; cheeks and side of the neck, white; belly, dull white. In winter the colours are duller, and the bill is yellowish brown. In the female the upper parts are striated with dusky brown; there is no black on the throat or grey on the crown, and the under parts are brownish white. The younger bird is deeper brown both above and below; the middle wing-coverts are tipped with buff; the bill is dull yellow.

The eggs are pale bluish-white, blotched, speckled or suffused with ash and dusky brown and black; measurements, 9-10ths by 6-10ths inch. The nest is of straw, hay, dry grass, and all sorts of odd materials; thickly lined with feathers; placed indifferently in trees, climbers, in the eaves of houses and other odd places.

According to Saunders\*: "The House Sparrow is generally distributed throughout Great Britain and Ireland wherever human habitations are to be found. In proportion, as land is brought under cultivation, the sparrow makes its appearance and rapidly increases, so that it is now established in the Inner Hebrides, the Orkneys, the Shetlands, and other places where it was formerly unknown. In Scandinavia it occurs, in suitable localities, up to and beyond the Arctic circle . . . eastward it can be traced across Russia and along the inhabited portions of Siberia to Dauria; but not to Japan or China. Westward the House Sparrow occurs in Madeira. In Africa it is found from Morocco to the Albert Nyanza, while it swarms in South Arabia and at Aden. Introduced like the rabbit, through officious ignorance, into Australia, New Zealand and the United States, it has become such a curse that special legislation has been loudly invoked for its destruction."

#### AS A NUISANCE.

In England:—In England the annual loss from the House Sparrow is estimated at three-quarters of a million sterling. We find the Board of Agriculture branding it as "a serious pest of farmer and gardener alike," and recommending its extermination or suppression as far as possible. Before the Select Committee of the House of Commons, mentioned above, voluminous evidence was taken regarding the Sparrow. From the mouths of witnesses I select a few unclassified remarks:—

1. "The great objection I have to Sparrows is that they are exterminating the martins. . . . Sparrows are the best allies of flying insects. . . . No bird, in my opinion, does as much mischief as the Sparrow. . . . The Sparrow is not only the greatest corn-eater of any of the small birds, but he is not kept down by cold winters."
2. "Any law to protect Sparrows, if at all observed, would have precisely the same effect as offering a reward for the destruction of martins."
3. "The House Sparrow stands in a class alone, it can hardly be considered a wild bird; it is a parasite living on our produce."
4. "The Sparrow is mischievous in every way."
5. "I can hardly describe the harm the Sparrow does to me; he does harm in every possible way. *He is utterly bad.*"

---

\* "Manual of British Birds." Howard Saunders, London, 1899.

6. "It is scarcely possible to say too much against these obnoxious birds."

In Australia:—The Sparrow nuisance is too notorious in Australia for any one to ignore. It has become established in every part, even tropical Queensland. The damage it does is enormous, but so firmly established has it become in the course of some 20 years, from the liberation of a few cage birds, that any steps to suppress it are now looked upon as hopeless.

In America:—In the United States the English Sparrow is described as a serious problem in economic science, particularly so far as the whole agricultural interests are concerned in their most comprehensive sense. Nowhere has greater attention been paid to it as a pest than here, and I have before me a report on the subject covering over 400 pages and dealing with every aspect of the question.\* From this report we learn that the first Sparrows were introduced in America in 1850. For a long time the attempts to establish the bird were unsuccessful, but in the course of 25 years, during which Sparrows to the number of 1,631 were introduced to 15 places directly from Europe, they were spread purposely to 92 towns. This was about 1870-75, and from then up to 1888 the birds multiplied with marvellous rapidity. "Some idea of the alarming rapidity with which it is at the present moment multiplying and extending its range may be had from the fact that in the United States alone it has spread during the past 15 years (1873-88) at an average rate of 59,000 square miles per year."

The rate of increase of the Sparrow is remarkable. Merrian says: "Its fecundity is amazing. In the latitude of New York and southward it hatches as a rule five or six broods in a season, with from 4—6 in a brood. Assuming the average annual product of a pair to be 24 young, of which half are females and half males, and assuming further that, for the sake of computation, all live together with their offspring, it will be seen that in 10 years the progeny of a single pair would be 275,716,983,698.

Everywhere, in England, in America and Australia the Sparrow has proved itself an enemy of insectivorous birds. In Pennsylvania the native birds rapidly and steadily diminished in numbers with the advent of the Sparrow. The bird was introduced into certain towns in America with the hope that it would rid the elms and shade trees of the caterpillars which annually defoliated them. The utter futility of this hope is demonstrated in hundreds of cities and towns which are overrun with Sparrows and where the trees are repeatedly defoliated by worms. In New York it was found that the Sparrows actually protected the cater-

---

\* "The English Sparrow in America." Merrian, 1899.

pillars of the tussock moth from their other enemies, and led to an extraordinary increase of the pest.

The following is the list of sins arrayed against Sparrows:—

1. They cause incalculable injury by driving away useful birds of insectivorous habits and by destroying their young.
2. They cause injury by the filth they produce.
3. They directly injure buds, blossoms, and foliage of trees.
4. They attack all fruits, *viz.*, peach, pear, grape, plum, cherry, apple, apricot, orange and fig, attacking buds, blossoms and fruit.
5. They are directly injurious to vegetables, particularly peas and young lettuce and cabbage.
6. Grain crops such as wheat, oats, barley, rye, buckwheat, amabele, rice and imphee suffer from them seriously from the time of sowing until the grain is stored.



### **Carbon Bisulphide.**

#### ITS NATURE AND USES.

QUITE recently the use of Carbon Bisulphide, as an insecticide, has become more general and popular in the Colony; more especially is this the case in treating stored mealies, and, in certain circumstances, in dealing with white ants.

Its application as an insecticide lies in:—

1. Its volatile diffusive nature.
2. The poisonous effect of the fumes on all animal life.
3. The weight of the fumes, causing them to penetrate downwards.

Pure Carbon Bisulphide resembles water in being a colourless liquid and possess a sweetish odour. As ordinarily supplied, it is more or less impure, possessing an unusually obnoxious and disagreeable smell and often slightly yellowish in colour. Directly the liquid is exposed to the air it volatilises, changing with great rapidity from a liquid to a gaseous form. The gas or fumes are colourless, and, being much heavier than air, sink downwards through any air spaces. These characteristics and its diffusive nature, together with the fact that when properly applied it is not injurious to edibles and fabrics, give it many advantages.

The pure chemical can be poured directly over even the finest materials and fabrics without injuring or staining them; but as the "commercial" or impure form is that in general use, and naturally cheaper than the pure, it is best applied by placing it in wide, shallow





THE "UNIVERSAL ANT EXTERMINATOR" IN USE.



THE ENGLISH HOUSE SPARROW.

*Passer domesticus*,<sup>\*</sup> Linn.



vessels, which are put on top of the goods to be treated. In such positions it vapourizes quickly, and the heavy gas, sinking downwards, accomplishes its purpose. The disagreeable smell is quite harmless and passes readily away when the treated materials are exposed to the air.

Carbon Bisulphide, whilst easily manipulated, should be regarded as a dangerous poison to handle, and certain precautions against accidents must always be taken.

Not only is the liquid itself highly inflammable, catching fire most readily, but the fumes are equally so, and when mixed with air quite explosive. In using the chemical in any connection, therefore, it is imperative that no naked lights should be employed; and, for the time being, the ever-present smoker must be carefully watched and the mischief-working powers of his Boer tobacco and match-box guarded against.

Although poisonous, ordinarily a reasonable amount of fumes may be inhaled without dangerous results; more particularly when working in the open air. When operations are being conducted in rooms reasonable precautions must be taken, and, if the operator becomes affected with dizziness, fresh open air should at once be sought. Too long an exposure to the fumes would result in illness, and, of course, it is quite possible to be poisoned and suffocated by them.

The chemical should always be conspicuously marked "Poison" and stored in glass-stoppered or screw-plugged drums. Even under such circumstances it is apt to volatilise and so get lost, and if only a part of the quantity purchased has been used, a good deal of loss can be prevented by pouring water into the receptacle sufficient to form a layer of water an inch or so in thickness over the Carbon Bisulphide.

#### FOR GRAINS AND SEEDS.

The use of Carbon Bisulphide for treating insect-infested grains and seeds is very extensive; particularly because its use need have no effect upon their germination.

Some time since, fifty-four varieties of seed were treated as a test in the Department of Agriculture at Washington, U.S.A. "Every precaution was taken to ensure uniformity in the seeds of each lot, treated and untreated. The treated lots were exposed to an atmosphere saturated with Carbon Bisulphide fumes for 48 hours. Under the most severe treatment, the severity of which would never be equalled in ordinary practice, a majority of the varieties showed no injury, and germination was practically the same in each lot. Seeds of the grass family seemed more tender than other kinds. Experiments were also conducted upon grain in bulk, using the liquid at the rate of 1 lb. to 100 bushels of grain. The exposure lasted 24 hours, and at the end of this period no injury of any kind could be detected in even the most delicate seeds." (Johnson.)

The seeds to be treated should be in tight bins, barrels or boxes, which have tight-fitting lids or can otherwise be well covered. Seed in bulk stored in rooms can also be treated, but the rooms must first be made fairly gas-tight, the success of the fumigation depending, of course, upon how long the gas can be retained in the room. Stacks of grain can be fumigated if covered with a good tarpaulin. It requires very little ingenuity to make many receptacles and rooms sufficiently tight for the purpose of fumigation, and stout paper will be found to be quite efficient in covering cracks and openings through which the gas might escape.

In applying the chemical it is either poured over the seeds or on to cotton waste, which is then placed on top so that the escaping fumes may sink downwards. A very common practice is to put the necessary amount of liquid in a shallow dish or in saucers, and from which it is allowed to evaporate. From 1 to  $1\frac{1}{2}$  lbs. of Carbon Bisulphide is sufficient for 100 bushels of grain or for 1,000 cubic feet of air space; that is, is sufficient for a room, bin or tank measuring  $10 \times 10 \times 10$  feet.

Whole buildings are sometimes treated with this chemical, and it would appear that much work in this direction is done in America, in the treatment of flour moth, weevil, etc. In treating mealies the Carbon Bisulphide can be safely applied directly on to the grain.

#### TERMITES AND ANTS.

White ants are one of the most serious pests to be met with all over Natal, and the amount of mischief wrought by them if it could be expressed in pounds, shillings and pence, would amount to a startling sum. They are most difficult pests to deal with once they have started their depredations in the house or amongst the garden plants, shrubbery, and fruit trees. This is due to the fact that in building, the ants are seldom properly cleared out of the ground, and, in laying off land for tree-planting, the same holds good. The mounds and visible queens may be destroyed, but the bulk of the colony, supplied with small supplementary queens, remain below the surface, unnoticed, until some catastrophe supplies evidence of their presence.

The practice of filling up the spaces beneath tiled verandahs, fire places, bathrooms and kitchens with soil and brick-bats, often intermixed with wood shavings, furnishes very congenial surroundings to white ants; indeed, in most cases of house attack, entrance is gained through these means, and as often as not nests are established therein. In such cases the boring of holes, at intervals of six feet, is suggested, down which 1 oz. Carbon Bisulphide may be poured regularly, say once a week, or as often as it found necessary, until the pests disappear. The holes should, of course, be plugged tightly with cork, and the verandah floor need not necessarily suffer much disfigurement. An alternative in taking up the tile and replacing it after treatment suggests itself, but I do not know



but what the first plan is just as desirable, and is certainly more convenient. Such places should always be treated when white ants appear in the walls, for the nest is almost certain to be situated beneath the tiled floors; in this case holes should be bored at intervals parallel with and distant about six inches from the wall. A little Carbon Bisulphide syringed into visible openings would also be advisable. It is almost unnecessary to add that a careful survey should be made of the environments of the house, and all nests discovered should be immediately treated, either with Carbon Bisulphide or, where possible, by the aid of

#### THE UNIVERSAL WHITE ANT EXTERMINATOR,

the general form of which machine is illustrated in the accompanying figure. This contrivance consists of an air-pump connected by a short length of rubber hose to a furnace. By working the pump, a continuous blast of air is driven into the furnace, entering beneath and escaping through a pipe near the top—shown to the left of the illustration—to which is attached a flexible iron hose. A charcoal or cow-dung fire is first started in the furnace, and, by pumping, got thoroughly alight. The powder is then sprinkled over the fire and the lid closed. By continuing the pumping, a very hot cloud of poisonous smoke is driven through the flexible hose. In use, the nose is inserted into a gallery of an ant's nest, and the smoke pumped in.

In the "Universal White Ant Exterminator" we have the most efficient and effective apparatus for destroying white ants in their nests which has yet come under notice.

Two rather unique cases in the use of the pump are worth recording. In the first case, a white ant's nest was discovered beneath the flooring of a farmhouse, and dug out. Later, white ants were noticed working at the mouth of a gallery 80 feet away from the house. Here the fumes were pumped in, and a few minutes later a cloud of smoke issued through the flooring of the room from beneath which the nest had previously been dug out.

In the second instance, honey bees had become a decided nuisance, making their nests between the lining and the roofing of a large verandah. Auger holes were bored through the ceiling boards and the smoke pumped in through a length of iron piping. The immediate result was to drive the bees out through every exit hole they knew of. Many dropped dead, but the great majority escaped alive. Afterwards, of course, the bees returned and, naturally enough, started to work cleaning away the poisonous deposit, with fatal results: an ironical return for their industry.

Wherever an ant gallery, sufficiently large (about half an inch in diameter) to admit the nose of the hose, can be obtained, the machine can be used with the most satisfactory results; not only are the insects

killed, but the galleries are thoroughly poisoned for an indefinite period. All other openings into the nest, which will be revealed by the issuing smoke, should be thoroughly closed, but not until the fumes have been allowed to pour out of them for a minute or two.

The powder spoken of is sold with the pumps. A cheaper and equally effective powder can be obtained by farmers at the Department of Agriculture, Maritzburg.

The small red and black ants will, of course, repay treatment with Carbon Bisulphide where their nests can be located.

#### STORED TOBACCO AND CIGAR WEEVILS.

We have in Natal several beetles which attack stored tobacco and cigars. Indeed, it is no uncommon thing to find many of the locally manufactured cheroots with weevils, or evidence of their having at one time been present. Moreover, upon the Coast, any cigars left stored away in a loose condition for any length of time will become badly infested.

Mr. W. Starr, of Verulam, grows much tobacco, and manufactures cigars and cheroots largely. Some years ago he made complaint regarding the weevil trouble, and, acting on suggestions then given, has been using Carbon Bisulphide with the utmost success in controlling and keeping the pest in subjection. The usual procedure is to place the infested material in a large box; an iron tank does very well.

The chemical is then poured into a saucer and placed on top of the material and the lid closed down for twenty-four hours. The quantity of chemical used should be the same as that advised for grain insects, *i.e.*, 1 lb. to 1,000 cubic feet, or 1 oz. to 63 cubic feet of air space.

#### WHITE GRUBS, MOLE CRICKETS, AND EARTHWORMS.

These pests, sometimes found in lawns and gardens, can also be treated with Carbon Bisulphide, the method to be followed being that outlined in discussing the destruction of white ants with this chemical.

#### CLOTHES, FURS, SKINS, CARPETS, ETC.

When found to be infested with clothes moths or other injurious insects, such items as those mentioned can be freed by fumigating with Carbon Bisulphide. They are placed in a box, trunk, or other receptacle, which should first be made tight with paper, and the chemical then placed in a shallow dish on top of the materials. Some sheets of paper are then spread over all, and the lid closed down.

#### MOLES, RABBITS, RATS, AND LAND CRABS.

Carbon Bisulphide has been very successfully used for destroying burrowing animals such as those mentioned, and other small animals

that live underground. Having located the holes or burrows, a piece of cotton waste the size of a hen's egg is saturated in the poison, and thrust far down into the hole, which should then be closed with loose earth, and packed firmly by stamping. Its use is to be recommended in preference to either strychnine or arsenic; both of these latter are dangerous to stock running loose, whilst the Bisulphide entails no such risk and is just as effective.



### ***Naartjes or Mandarines?***

In the last issue of the *Transvaal Agricultural Journal* Mr. R. A. Davis discusses the nomenclature of the Mandarin orange, and raises a question as to what term or terms should be generally adopted and maintained in so far as the export of these fruits from South Africa generally is concerned.

The question at issue is in reality whether the term "Naartje" should be employed as a generic name of Mandarin oranges in general, or whether it should be restricted to one variety or one group of this division of citrus fruits.

Personally, I would like to see the term retained for one variety, or, in other words, for the type of fruit which we in Natal recognise as a Naartje.

In this Colony there are two well-defined and characteristic fruits, coming true to seed and spoken of as "the" Naartje and "the" Mandarin. Other than these three are the Bombay or myrtle-leaved Naartje and the willow-leaved (either Dancy or Beauty of Glen Retreat).

The first two mentioned are old-established kinds which vary little in their characteristics, whilst the others are comparatively recent introductions. The Bombay Naartje is characterised by its loose puffy skin and deep red colour and conspicuous cells. It was, I believe, originally introduced from India by Mr. Medley Wood as the Suntura Orange, and would appear to be typical of this group of Indian Mandarines. Because of its foliage it is called the Myrtle-leaved Naartje by a few, and the tree itself has more the character of the Mandarin than the Naartje. The fruit is generally very typical, but I have been shown forms more approximating Naartjes and certainly somewhat of an improvement.

The "Willow-leaved Naartjes"—of which very few are in cultivation—are not generally preferred to the Naartje, but the variety certainly appears to have greater resistance against the peculiar physiological troubles to which the Naartje is so subject in this Colony.

The casual differentiation between a Naartje and a Mandarin is,



as Mr. Davis indicates, the flat base of the Naartje and the prominent nipple in which the stem of the Mandarin is inserted. But, just as one may find Mandarines without the protruding base, so Naartjes are not uncommon with quite pronounced nipples. The trees are, however, very distinct and the fruits have their especial characters.

The Naartje tree is pyramidal, very thorny, with vigorous stems and partaking somewhat of the common lemon in growth and foliage. The fruit is normally flat, with a firm, tight rind of golden-yellow or red-yellow colour, of little rag and juicy and piquant in flavour.

The Mandarin tree is domed-shaped, not thorny, stems lighter than the Naartje and foliage smaller and much darker. The fruit is more globose, loose rinded and never acquiring the rich colour of the Naartje, juice sweeter than the Naartje.

Last season we advised the fruits shipped separately as Naartjes, Mandarines and Bombay Naartjes. At first all the fruit was looked upon as only Mandarines, but there is ample evidence that the Naartje—as such—later came to be recognised as a particular and good type, and, further, as something peculiarly South African.

As time goes on I cannot help thinking that the qualities of the Naartje will be further borne in upon buyers and consumers and they will readily learn to distinguish the South African, or at any rate the Natal Naartje, as something apart from Mandarines and Tangerines.

For these reasons, therefore, I would like to see a standard set up for the Naartje as a distinct type from other South African Mandarin Oranges.

In his note Mr. Davis touches upon the deviation of the word Naartje, and ventures the opinion that the name came with the fruit from the east and has been assimilated into the “Taal.” Mr. Davis adds: “If that is so, it is highly probable that quite without being aware of it, we have gone back to the original name of this fruit or something very like it.”

There is certainly no doubt upon this score whatever, and to my mind Naartje is as directly derived from the historical original word for oranges as is the term “orange” itself.

The oldest terms for the orange is the Persian word *narang* and the Arabian *naranj*. Citrus fruits were brought to Europe and first grown in Spain by the Moors and there to-day retain practically their original name, for the Spanish for orange is *naranja*. The old English form *norange*, which euphony now renders as “an orange” instead of “a norange” is strikingly like the original, as is the French, *l'oranger*, the Dutch, *Oranjeboom*, the German, *pomerang*, and the Italian, *arancio*.

Had the early Dutch acquired the Naartje from Europe one would have expected the Taal diminutive to have been *orantje*; but, considering that the Persian word *narang* has travelled east as well as west and



is found in India in its original form as well as in the forms *narunj* and *naringhi* or *naranghi* (a term between five and six hundred years old in India which is to-day although applied to oranges in general still in particular is applied to a certain Mandarin), it is quite reasonable to suppose that *naartje* is a corruption direct from the Indian or Arabian terms. Indeed one only has to take the Arabian *naranj* and make a diminutive of it *narantje* to get a term as closely approximating *naartje* as possible.

Whilst general opinion points to the derivation of the Indian terms from the Persian, there is also a possibility that the Sanskrit word for the orange, *naranga*, is derived from *nagrang*—the colour of red lead, as claimed by the Pundits.

It is, however, thought that the fruit first became naturalised in S. India, arriving there from China by way of the Malay Archipelago, and was named *nartun* on account of its fragrant flowers, rind and leaves. From S. India it may have been taken by Arabs to Persia and the word *nartun* there corrupted, or the word *naranj*, which signifies "like a pomegranate," applied to it.

At present all we can say is that *naartje* is practically as directly derived from the Persian terms as is *orange*, *pomerang*, and *arancio*.



### **Pineapple Export.**

In response to the offer made by the Minister of Agriculture at the meeting of fruit-growers held in Durban, some 1,400 odd pineapples were packed and shipped per the R.M.S. *Norman*, which left Durban on the 31st December, 1908.

It will be remembered that the Minister offered to forward a trial shipment to England free of freight and packing charges, with a view to ascertaining the best means and stage of ripeness in which to ship the summer crop and also to test the value of the pines upon the London market.

Despite the fact that I was able to give only a few days notice of my arrangements to ship by the *Norman*, eight growers came forward with pines. These were forwarded to the packing-house at the Point and there sized, graded and packed by myself and staff.

Altogether 1,422 pines were sent away, the consignment comprising 1,390 of the ordinary small Natal pines, running from 1½ to 2 pounds in weight, and 32 Cayenne pines weighing from 3 to 5 pounds each. Each grower's fruit was dealt with separately, the fruit being graded out in accordance with the degree of ripeness as manifested by the colouration.

## PARTICULARS OF PINEAPPLE SHIPMENTS.

| Experimental Lot No. | Total No. of Boxes. | No. of Boxes by C.C. | No. of Boxes by V.H. | Weight of Fruits lbs. | Remarks.                                                                                                                                                                                                |
|----------------------|---------------------|----------------------|----------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A 1                  | 10                  | 9                    | 1                    | 1½                    | These pines had been picked green and subsequently coloured up. Probably owing to a slight heating through the pines being stacked for some days, the stalks and basal leaves were shrivelled a little. |
| A 2                  | 5                   | 5                    | —                    | 1¾                    | Similar in condition to A 1.                                                                                                                                                                            |
| A 3                  | 1                   | 1                    | —                    | 2                     | Similar in condition to A 1.                                                                                                                                                                            |
| A 4                  | 2                   | 1                    | 1                    | 1½                    | Fully coloured, fresher than A 1, 2 & 3.                                                                                                                                                                |
| B 5                  | 5                   | 3                    | 2                    | 1½                    | Colouring up, but not fully coloured.                                                                                                                                                                   |
| A 6                  | 3                   | 2                    | 1                    | 1½                    | Similar to A 5. Ends of stalks sealed.                                                                                                                                                                  |
| A 7                  | 4                   | 2                    | 2                    | 1½                    | Pale green.                                                                                                                                                                                             |
| A 8                  | 2                   | 1                    | 1                    | 1½                    | Pale green. Ends of stalks sealed.                                                                                                                                                                      |
| A 9                  | 6                   | 3                    | 3                    | 1½                    | Greenish-black                                                                                                                                                                                          |
| A 10                 | 3                   | —                    | 3                    | 1½                    | Greenish-black. Ends of stalks sealed.                                                                                                                                                                  |
| A 11                 | 1                   | 1                    | —                    | 1½                    | 3 Colouring up; 9 coloured.                                                                                                                                                                             |
| A 12                 | 2                   | —                    | 2                    | 1½                    | Pale green; sent without stalks.                                                                                                                                                                        |
| *B 1                 | 3                   | 3                    | —                    | 1½                    | Fully coloured.                                                                                                                                                                                         |
| B 2                  | 9                   | 9                    | —                    | 1½                    | Yellowish.                                                                                                                                                                                              |
| B 3                  | 7                   | 4                    | 3                    | 1½                    | Greenish-black.                                                                                                                                                                                         |
| B 4                  | 3                   | 3                    | —                    | 1¾                    | Fully coloured.                                                                                                                                                                                         |
| B 5                  | 3                   | 3                    | —                    | 1¾                    | Yellowish.                                                                                                                                                                                              |
| B 6                  | 3                   | —                    | 3                    | 1¾                    | Greenish-black.                                                                                                                                                                                         |
| B 7                  | 1                   | 1                    | —                    | 2                     | Fully coloured.                                                                                                                                                                                         |
| B 8                  | 1                   | 1                    | —                    | 2                     | Yellowish.                                                                                                                                                                                              |
| *C 1                 | 5                   | 3                    | 2                    | 1½                    | Fully coloured.                                                                                                                                                                                         |
| C 2                  | 1                   | 1                    | —                    | 1¾                    | Fully coloured.                                                                                                                                                                                         |
| C 3                  | 1                   | 1                    | —                    | 1¾                    | Fully coloured.                                                                                                                                                                                         |
| C 4                  | 6                   | 3                    | 3                    | 1½                    | Yellowish.                                                                                                                                                                                              |
| C 5                  | 10                  | 5                    | 5                    | 1¾                    | Yellowish.                                                                                                                                                                                              |
| C 6                  | 2                   | 1                    | 1                    | 1½                    | Greenish-black.                                                                                                                                                                                         |
| D                    | 4                   | 2                    | 2                    | 1½                    | All greenish.                                                                                                                                                                                           |
| E                    | 3                   | 1                    | 2                    | 1¾                    | All greenish.                                                                                                                                                                                           |
| F                    | 4                   | 1                    | 3                    | 1¾                    | All greenish-black.                                                                                                                                                                                     |
| G                    | 5                   | 2                    | 3                    | 1¾                    | All greenish-black.                                                                                                                                                                                     |
| H                    | 2                   | 2                    | —                    | —                     | All greenish-black.                                                                                                                                                                                     |
| I                    | 1½                  | 1½                   | —                    | —                     | Cayennes; greenish-black.                                                                                                                                                                               |
| J                    | 6½                  | 6½                   | —                    | —                     | Cayennes; partly coloured.                                                                                                                                                                              |

NOTES.—*Mark B*: These pines were not so carefully forwarded as in the case of others sent in for export. *Mark C*: All pines freshly picked and delivered in good condition.

The attached tabulated statements detail the sizing and grading of each lot, and show the manner of stowage adopted in each case. Arrangements have been made with the Government Commercial Agent in London to examine and report upon the condition on arrival of each package, and I have every hope that the experiment will show, at the very least, what stage it is best to ship these pines in. It will also show how the different stages behave under the influence of cool stowage and by ventilated hold; and, further, some idea of the value of pines of the qualities and sizes sent will be attained.

The boxes selected for the small pines measured, over all, 24 by 12 by 6 $\frac{1}{4}$  inches. These boxes are a very convenient size for the 1 $\frac{1}{2}$  and 1 $\frac{3}{4}$  pound pines, holding a dozen of each with the stalks cut between 1 $\frac{1}{2}$  and 2 inches in length. With one inch stalks the boxes carried 9 full 2 lb. pines comfortably, making a nice pack.

A great deal of insistence has been laid upon the desirability of shipping pines to the London market with long stalks, and it was my intention, at the start, to send these pines with 3 to 4 inches in length, despite the fact that pines of this size are usually marketed without stalks. When, however, I came to arrange the packs and found that by accepting 3 to 4 inch stalks I could only pack eight fruits to the box, I decided that it was better, in this instance, to sacrifice 8 inches of stalk which, in freight and packing were equivalent to four pineapples.

The boxes were paper lined and each fruit was also wrapped in stout paper, wood-wool being used as "packing." The dozen packs were in two layers with the crown of each successive pine reversed and with the upper layer covering the spaces between the fruit of the lower. The nine packs were similarly arranged, the lower layer being of five fruits and the upper of four.

In some instances the ends of the stalks were dipped in sealing wax with a view to ascertaining whether this process possessed any beneficial effect. Several boxes were sent containing fruit from which the stalks were entirely removed, and two boxes of eight fruits each were forwarded upon which the stalks were left long and the basal leaves not detached.

Packed by the dozen in these boxes I estimate the cost of boxwood and packing at 9d. per box. The freight by ventilated hold works out at 10d. per dozen, and by cool chamber at 2s. per dozen.

It will, therefore, be seen that if the fruit in any particular stage of ripeness arrives successfully, the cost of placing the same upon the market is either 1s. 7d. or 2s. per dozen.

Assuming that the pines realise 5s. per box, the market charges and commission will not amount to more than 6 $\frac{1}{2}$ d. At this figure then the total cost by hold stowage is 2s. 1 $\frac{1}{2}$ d., leaving a net balance of 2s. 10 $\frac{1}{2}$ d. per dozen, and by cool chamber 3s. 3 $\frac{1}{2}$ d., or a net return of 1s. 8 $\frac{1}{2}$ d. per dozen.

The present ruling price of pineapples upon the Durban market being 6d. per dozen, it will be seen that providing the pines can be successfully shipped, but a very low gross return upon the London market is needed to better the prospects of pine growers.

If the pines do not carry or if the fruits realise an unprofitable figure, the loss upon the experiment is not of any magnitude. Putting the value at 6d. per dozen, the value of the pines and the railage does not amount to more than £4, or an average loss of 10s. per shipper.

The freight and packing works out at £16, an amount which is being defrayed from the Parliamentary Vote for trial shipments of this nature.

The few Cayenne pines forwarded will be sufficient to demonstrate their carrying properties. These were packed in improvised boxes holding four pines each. I made no attempt to follow the Azores' method of packing, but at a later date I hope to send forward a shipment of this variety, preferably when Mr. Harrison's report upon those already shipped comes to hand.

CLAUDE FULLER.



The Controller of Excise calls attention to the provisions of Section 13 of the Excise Act, 1901, which is as follows:—"No person shall, without first obtaining from the Controller the appropriate license provided for in the second schedule of this Act, do any of the following things, save as by this Act specially excepted: Keep a still, make stills, distil spirits, rectify or compound spirits, sell methylated spirits by retail, make wine." All present licenses expire on the 31st December, 1908, and renewal licenses must be obtained from the Controller of Excise, Jameson's Buildings, Pine Street, Durban, not later than the 31st January, 1909. Stamps for these licenses are to be obtained at the Post Office only. All applicants for licenses must comply with the provisions of the Registration of Firms Act, 1906, before licenses can be issued.

According to the *Journal d'Agriculture Pratique*, it has been found that flies have a great objection to the colour blue—to such an extent that if the walls of a fly-infested shed are covered with whitewash in which some blue colouring matter has been dissolved, the flies will quite desert the place. It is stated in the *Journal* that a farmer had 170 cows housed in different sheds; they were pestered with flies, but he observed that in one shed, the walls of which were of a blue tint, the cows were not worried. He therefore added some blue colouring matter to the lime with which he washed the walls of his building, and from that time the flies have deserted his buildings. The following is the formula used by him for the wash:—To 20 gallons of water add 10 lbs. of slaked lime and 1 lb. of ultramarine. The walls are washed twice during the summer, when the insects multiply most and are particularly troublesome. The plan seems worth a trial, and we should be glad to hear of results from any farmers who may experiment in this direction.



## ***The Position of East Coast Fever.***

### LIST OF OUTBREAKS DURING DECEMBER AND JANUARY.

THE Chief of the Veterinary Division (Mr. W. M. Power) furnishes the following list of outbreaks of East Coast Fever that have occurred during the past two months:—

*Dundee District.*—Outbreaks on farms “Waschbank” (west of main line), “Sheepridge” (east of main line), “Whinstone” (east of main line), and “Mountain View” (east of main line).

*Weenen County.*—Outbreak on farm “Koorn Spruit.”

*Umvoti County.*—Outbreaks on farms “Mt. St. Bernard” (Mr. R. J. van Rooyen’s portion of “Rustenburg”), and “Summerfield.”

*Klip River.*—Outbreak on farm “Tylden,” sub-division of Pooteneas Spruit (west of main line).

*Krantzkop Division.*—Outbreak on farm “Sutherland.”

*Ungeni Division.*—Outbreaks on farms “Cariton,” Lots 2 and 10, “Kingston,” Lot 33, “New England,” “Malton,” “New Park,” and “Non Such.”

*City Division.*—Outbreak on farm “The Cloisters.”

*Lion’s River.*—Outbreaks on farms “Riversdale” (west of main line), “Gretna Green” (east of main line), and “Driefontein” (east of main line).

*New Hanover.*—Outbreaks on land of Summer Hill Wattle Co., D. von Fintel’s portion of “Green Hill,” H. P. von Fintel’s portion of “Green Hill,” and Lot No. 10.

*Camperdown.*—Outbreaks on farms “Skiddaw,” “Scawfell,” and “Klipspruit.”

*Upper Umkomanzi.*—Outbreak on farm “Trewirgie,” portion of “Driefontein.”

No record is kept of outbreaks in Zululand, Vryheid, Paulpietersburg, Babanango, Ngotshe, Lower Tugela, Mapumulo, Inanda, nor of those in the already infected locations.

The world’s production of phosphates in 1907 is placed at 4,347,107 metric tons, as against 4,092,243 tons in 1906. Of this amount the United States furnished 1,917,000 tons in 1907 as against 2,052,000 in 1906.

## **Crown Forests.**

### QUARTERLY CONSERVATION REPORT.

THE Chief Afforestation Officer reports as follows to the Director of the Division of Agriculture and Forestry:—

I regret that owing to pressure of work my quarterly report, due midsummer Michaelmas, has not been made, but the effect of the reduction of my Cedara staff of three to two has naturally been felt, and certain work hitherto performed must be, if not entirely cut out, necessarily late.

In happy contradistinction to last year, the elements have been most favourable, and, owing to the mildness of the winter (4 degs. of frost being the most registered at the Nursery) and early spring rains, the plantation increments and the condition of the nursery stock have been highly satisfactory. I hope to compile for publication shortly lists showing the comparative increments of the various species and varieties at Cedara and Empangeni, together with figures from private plantations where accurate data are obtainable. During May and June brands were fired completely round the plantations; the integral work so urgently needed has not been done, the labour vote being inadequate. The removal of the old fence and its re-erection in straight lines has made our perimeters more business-like and the danger of fire much reduced in consequence. The straightening of the fence increased the forestal area considerably, and much of the land so acquired has been broken. No portion of the new areas has yet been planted, but preparation has been steadily pushed on, and December monthly report, which will be put up for your information as per Section 7b, of Circular 1st October, 1908, will contain details as to mealie planting therein. The material saved by the alteration of the fence has been returned to the farm store.

Plantation thinning went on continually during April, May, June and July, and a large stock of poles is now on hand. Considerable numbers of these are being used for pole drains in the Reit Spruit Vlei. A year hence I anticipate that the quantity of thinnings available will be altogether in excess of the Farm requirements, and firewood will be available for Government Departments which now have to purchase wood for native and coolie rations. The home arboretium, nearly 70 acres in extent, has had all double leads removed, and thinning of alternate lines in the *E. obliqua*, *E. gunni* and *E. sideroxylon* section has been done. The thinning of *E. corynocalyx* plantation too has been completed, and the trees now stand 5 x 10 and are canopying very rapidly.

Trespassing by natives having become very frequent, I instituted a prosecution, which led to a conviction, the native, Maceba, being fined 10s., or a week. A marked diminution of the offence is the result. The purchase of Cedara by Government closed many paths the natives were in the habit of using, and the opening of an Arab store near the main gates has naturally increased kafir traffic. Forest areas are, however, being much more respected. Owing to the unreliability of local men as forest guards, a boy has been obtained from the Eshowe Division of Zululand, and thefts of wattles and trespass of goats and sheep have become more or less things of the past.

The brow of the hill immediately below the Orchardist's house, in which the fruit trees were irreparably injured, has been taken over for afforestation, and trees as under at 5 x 5 spacing have been planted:—

*Cupressus lusitanica*, 4,700    *Acacia melanoxylon*, 2,670.

*Sucalyptus occidentalis*, 890.

The seed of *A. melanoxylon* sown in the strip south of the Experimental Plots having germinated badly, the plantation has been completed by transplants, some 2,000 being used in this connection.

Thinning of the avenue pines has been commenced and will be completed shortly.

Lists of trees sent out to Government Departments, sold to the public, etc., will be compiled at the end of the year.

#### CONSERVATION REPORT FOR DECEMBER.

THE Chief Forest Officer (Mr. G. H. Davies) reports as follows to the Director, Division of Agriculture and Forestry:—

I beg to report for the month of December, 1908: The *Cape Argus* of 20th November devoted its leading article to the subject of the desiccation of South Africa, doing me the honour of reference to my report published in the October issue of the *Natal Agricultural Journal*. It is gratifying to note that observers in the Cape Colony, Orangia, and the Transvaal concur emphatically with me both as to the fact and to its cause (denudation of forests) and that, in reparation, we must plant afresh. The Home Press is also taking up the subject of afforestation, but from an economic standpoint: the assistance of the unemployed, and the production of revenue from Crown lands. A country that can afford old age pensions should certainly utilise all its soil, but here we have a different aspect of the problem. Climatic reasons are, with us, important enough to take precedence of the immediate production of revenue, and as the veriest scrub-forest of natural formation is climatically more valuable than a plantation of fine timber many times its size, conservation of the remnants of our wild forest should be the first care

and afforestation second. Unfortunately, financial considerations are apt, in a young country, to make it difficult to spend upon necessarily unproductive (directly) conservation, or even to sink adequate capital in such afforestation as would eventually repay the cost of conservation. In Natal, too, we have to meet a demand for land for closer settlement, which seems to oblige us to alienate a large number of small wild forests that should be the nuclei of plantations, and which we part with in the hope that the poverty of their timber and the inaccessibility of their sites will preserve them from destruction. I believe that in many cases the bushes recently abandoned are safe from absolute destruction for these reasons; but some are not, and I do not see why protection cannot be afforded to all natural forest, on private as well as on public land. That a really effective forest law was not passed in the early days of the Colony is a huge misfortune. What wealth would have been saved! What irreparable losses prevented! As it is never too late to mend it is not too late to take action now; but, obviously, the sooner the better. In this connection, Forester Ball, of Olivier's Hoek, reports that the settlers on the new allotments in the Berg have already begun to sell wood from the bushes there. It will be hard to make a living off such lands.

At the Ingwangwane, on the Griqualand border, Forester Fernando reports that the Government Land Valuator, Mr. Forsyth, has been inspecting the Crown lands adjoining the Xalingena and Ili forests, of which the beacons were pointed out to him, and also the cash value of the standing crop of timber. Another visitor, a timber merchant, is considering the erection of saw-mills at these forests.

Forester Fernando notes the profuse flowering of the *umbaba* (*Calodendron capense*) this year, and accords it a cycle of five years for special display. Forester Ball is equally struck by the blooming of *Dais cotinifolia* (as the tree he describes must be) and possibly the fine show in the Emkazeni Forest—grandly staged on a mountain side—is helped by this flower, so like, at a distance, that of the wild chestnut. *Dais* is not a large tree and would be an ornamental addition to our gardens. It prefers the edges of bush, and is often seen isolated outside them. It should therefore be easily transplanted or reared. Forester Fernando also notes the luxuriance of the hemlock just now, and thinks that visitors to the forests should be warned against it—especially children. With regard to *Rhamnus prinoides*, mentioned in my report in the November issue, Forester Chilvers points out that he named "Dog Plum," not "Dogwood," as being deciduous at Ingeli. *Ekebergia capensis* should therefore be substituted. These vernacular names are often confusing, and Dog Plum is also known as "Essenwood," which is also attributed to *Ekebergia Meyeri* and to *Trichilia emetica*. The bark of *E. Meyeri* is, according to Forester Fernando, used by natives as



an emetic, and it is probably the same tree as *Trichilia*—the only distinction between *Ekebergia* and *Trichilia* being that the latter has a dry, splitting capsule while the fruit of the former is fleshy, unopening. Forester Houshold remarks upon the plentiful growth of seedlings of sneezewood and Cape beech in the Gongoma portion of the Qudeni Forest this year; the latter, however, does not succeed very well in the interior of bush.

Forester Foster, who sowed some yellowwood seed in various parts of the Ngomi Forest, reports that they are coming up. He states that his nursery sowings have not been successful, but that is a matter for the Chief Afforestation Officer. So is, I believe, the thinning of the wattle plantations, but the papers are still in my hands awaiting the completion of the work. It is unfortunate that, as natives are doing little or no hut building or repairing, the thinnings are being mostly cut to waste. Forester Fernando succeeded in selling a little of it, but his thinning will, on the other hand, cost considerably more in cash than Forester Purser's. The admission of sunlight may cure the "blackspot" prevalent in the Ingeli plantations.

The Ingeli forests seem swarming with animal life, and by the report of Forester Chilvers the hunting of last winter has not appreciably thinned the bushbuck. Forester Purser mentions in his report the complete reversal of parts by three bushbuck chasing his native boy into his own hut. The eland at Giant's Castle have now formed up into large herds, one of which was estimated (by native guards) to contain two hundred head, inclusive of a great many calves. Forester Symons thinks that several old bulls should be shot to prevent their continual battles with the young bulls. There is, however, another aspect of the matter: the challenge of the old males is Nature's method of securing vigorous sires. In the case of animals we intend to tame, however, there is something to be said for interference with this pugnacity, which is favourable to wildness of disposition and tends to lower the rate of increase. We can do the selection of sires ourselves, and so improve the breed for domestic purposes.

Forester Mason blames the mongrel dogs of the natives as the chief destroyers of game in his forests. The present dog tax seems to allow too many of these half-starved creatures to exist. The native does not pay money for nothing, and so must get its worth out of the dogs somehow—possibly in canine affection.

At Ngomi Forester Foster came twice across leopard-killed bluebuck. Cane-rats, of which he saw three, are complained of by the natives for their depredations in the mealie and mabele gardens. The latter are now attracting the baboons, who are moving up to positions from which they can raid the mealies already in cob. The natives' crops are reported as promising at Ngomi and the result should be

favourable to the rent-roll of that forest, where the squatters have been paying up their arrears fairly well of late. As mealies were recently £2 a bag, the green mealies now ready must save the natives much expenditure. In Alexandra County Forester Rigg reports that natives are ploughing up more land than last year.

While Forester Clark, of Empangeni, reports December weather as dry and hot, most other stations return it as very wet. Beyond Vryheid—at Pongola Bush and Ngomi—and on the west at Ingwangwane and Bulwer and elsewhere rivers have been up and rains heavy. I can speak of Bulwer myself as my trip there was spoilt by rain. At Ingeli rain fell on 22 days, but along the Berg it was drier, Forester Mason reporting drought, and Forester Symons and Moller, at Giant's Castle and Normandien respectively, stating that with them the first half of December was wet and the latter half dry. Hail was pretty general, a great storm doing much damage at Bulwer on the 23rd instant. Fortunately for me I had then left that charming resort.

---

The preparation of potash as a by-product of sunflower culture is one of the industries of Northern Caucasus. The potash is prepared by lixiviation of ashes of the stalks, stems, leaves, etc., of the sunflower, evaporation of the solution, and calcination of the residue. Twenty-four factories in Caucasia in 1907 produced about 12,600 to 16,200 tons of potash. About one-fourth of the product is used in Russia, and the rest is shipped to foreign countries.

---

MOULDING WAX.—Wax in a large cake is readily saleable if of good quality, but if it is sold in one, two, and four ounce cakes it is more likely to create a demand for such convenient pieces of a domestic necessity. Moulds to give blocks of various sizes are made and used by many bee-keepers. By a little testing it could soon be found out what size would sell best, and what form the mould should take to give the requisite sizes. To make such a block with movable cross pieces is not beyond a bee-keeper who can use saw and plane, or one who is clever with the knife and has the necessary patience.—“Ivo” in *Farm, Field, and Fireside*.

## ***Among the Farmers.***

### THE ASSOCIATION DURING THE MONTH.

THE present is a busy time of the year in the fields for farmers, so that we have, for the last month or two, had little to report on the doings of the associations. This month we have a few reports before us, the first of which relates to the annual general meeting of the Rosetta Co-operative Association, Ltd.

#### ROSETTA.

The annual general meeting of the Rosetta Co-operative Association, Ltd., was held at the Rosetta Hotel on Tuesday, December 15th, 1908:—

The Chairman (Mr. C. Groom), in moving the adoption of balance sheet and directors' report, stated that the turnover of the Association for the year ending 31st October had been £12,835 7s., an increase of over 150 per cent. on the preceding year. Crops had been above the average and prices during the last three months of the year abnormally high.

Trade had been distributed more widely than hitherto, and it was intended to further test the London market by small weekly consignments of new potatoes.

In spite of the large increase in trade with Johannesburg and other inland markets at very remunerative prices, Durban had been the principal outlet for produce, and the system of delivery direct to the consumer had proved so successful that it was intended to increase the number of cash carts and scope of the Association by selling all lines of produce and fruit, in addition to potatoes.

The year had been a most successful one, and the directors had pleasure in recommending a dividend of 8 per cent. Lieut.-Col. B. Crompton supported the motion, which was carried unanimously.

It was resolved to increase the number of directors to five, to provide seats on the board for the nominees of members of the Association or affiliated societies in other districts.

The retiring directors were Messrs. C. Groom (chairman), C. R. Heenan, and W. F. Taylor, the latter not seeking re-election.

Messrs. C. Groom and C. R. Heenan were re-elected. Lieut.-Col. B. Crompton, Mr. J. W. Johnston, and Col. W. Sangmeister (Lower Umzimkulu Farmers' Society) were elected.

The retiring auditor, Mr. V. W. Steward, was unanimously re-elected.

## EMPANGENI.

A general meeting of the Empangeni and District Sugar Planters' Club took place on Wednesday, 13th inst., at Empangeni. Amongst those present were Messrs. Percy Stott, C. B. Addison, Herman Goodman, T. C. Sturrock, Salveson, Blake, and C. S. Paul. Mr. Stott presided.

The question of the reconstruction of the Club was discussed at length, and it was finally agreed to change the name to that of "The Empangeni and District Sugar Planters and Farmers' Association."

The following new officers were then elected:—President, Mr. C. B. Addison; vice-president, Mr. P. Stott; secretary and treasurer, Mr. Felix Piccione; auditor, Mr. Carey; committee (with power to add four others), Messrs. P. Addison, Salveson, Blake, and G. Higgs. The draft rules of the Association, as drafted by the committee, were then submitted, and adopted with amendments and additions.

## TRAM LINES.

The Chairman stated that at their last meeting a resolution was adopted instructing the secretary to write the Minister for Agriculture, complaining of the delay on the part of the mill proprietors to fulfil that portion of their contract in regard to the laying of tram lines to convey planters' cane to the railway siding. A reply had been received, advising the Club to seek legal remedy. Since then, however, Mr. C. B. Addison had constructed a heavy narrow gauge line from a point near the Umhlatuzi Bridge, through several farms, to his cane. This line, though private property, was laid in such a way that it was convenient to all the cane farms on the Umhlatuzi Flats.

Mr. Addison mentioned that the mill proprietors had stated that they were not opposed to providing the necessary facilities for the conveyance of planters' cane to the mill, provided the planters' cane offered sufficient security for the outlay and payment of interest at 6 per cent., but at the same time the mill proprietors thought the necessary means of transport could be far more economically carried out by the planters themselves.

Several members thought that no effort should be lost to insist upon the mill proprietors carrying out their legal obligations under the agreement.

It was ultimately resolved to form a committee to go into the whole matter, and to report fully to a special general meeting.

## NATIVE WAGES.

Mr. Piccione mentioned that there was a desire on the part of some of the members to go into the question of seeing what could be done towards controlling the rate of wages of native labourers employed by local planters.



Mr. Carey urged that the planters should consider the question seriously, as the Kafir was being by far too highly paid for his services. The planters could fix the rates of pay for certain classes of work.

Mr. Addison thought the native here was not too highly paid, as in other parts they were paid 1s. per diem, and the ordinary wage was 20s. per month, which was certainly a low rate of wage.

Mr. Goodman said that if such an agreement were made, it would not act beneficially on the planters; besides, if the rate of wages were lowered, he thought the boys would simply stay idle in their kraals and refuse to work.

Mr. Stott was of opinion that wages were inclined to be a little too high for boys, but did not think any binding rate should be agreed to just at present. The matter then dropped.

#### EAST COAST FEVER.

The Chairman stated that the committee had written the Magistrate of Mtunzini, complaining of cattle from near the Ngoye Mission Station, which was an infected area, being allowed to move to the Umhlutuzi Station. The Magistrate's reply, dated 28th ult., was read, in which it was pointed out that no disease existed yet near the Ngoye Mission Station, but that the Club's letter would be placed before the next meeting of the East Coast Fever Association Board. The committee's action was confirmed. It was decided to approach the Government with a view to the appointment of an East Coast Fever Board for the Umhlutuzi Flats.

#### FARM RENTS.

Mr. Piccione pointed out that with any first-class farm in the flats, the Land Board issued building sites on the ridge of a sandy hill, the rent for such sites being the same or similar to that charged for first-class farms. Further, many planters had, since commencing operations on their first-class farms, discovered in many cases that a larger portion of the land was either too poor for crops, or too moist and swampy, and he thought in such cases the Government should reduce the rents.

Mr. Stott stated that he thought the Government, when application was made for conversion into freehold of any lot, would value the ground for such purposes, and naturally take any such defects mentioned by the previous speaker into account.

It was then agreed to communicate with the Government, with a view to reductions being made in the rentals of building sites, and portions of first-class farms which were too poor for cultivation.

The President, Mr. F. Addison, mentioned that as this body had now extended its scope by embracing agriculture generally, any person was now eligible for membership, and he hoped the farmers who had not already joined would do so soon, and strengthen the hands of the Association.

---

SWEET POTATO GROWERS ASSOCIATION.

---

We referred some months ago to an important new industry which was being started on the Coast—namely, the manufacture of starch from sweet potatoes. Sweet potatoes grow well in many parts of the Colony, and there seems to be every prospect of a large industry being built up, provided farmers rise to the occasion by supplying the raw material to the factory. We note with interest that an association has been started, under the title of the “Natal Sweet Potato Growers’ Association,” and with its headquarters at Wartburg. A meeting of the Association was held at the Green Branch Hotel, at Wartburg, on the 22nd December, at which there was a large attendance. Mr. Mitcheson, the manager of the Natal Starch Factory, at Umgeni, was present, and he gave the meeting some idea of the prospects of the industry which he represented, pointing out the large market which now existed for sweet potatoes, and urging farmers to go in for their cultivation more extensively. We trust that farmers living in those parts of the Colony where sweet potatoes will grow and yield a profitable return, will seriously take Mr. Mitcheson’s advice to heart. Sweet potatoes will grow on any sandy soil, and the yield is very considerable per acre, so that no very large area need be planted—at first, at any rate,—by each individual farmer.

We have received a copy of the Rules and Regulations which have been drawn up for the use of the Natal Sweet Potato Growers’ Association, and we have pleasure in printing same herewith. They are as follows:—

Par. 1.—The name of the Association shall be the “Natal Sweet Potato Growers’ Association,” and it shall have its headquarters at Wartburg.

Par. 2.—The object of the Association shall be to forward the interests of sweet potato growers in Natal.

Par. 3.—Membership of the Association shall be open to all *bona fide* sweet potato growers, farmers and manufacturers. The committee shall consider and deal with applications for membership.

Par. 3.—Members shall pay an annual subscription of five shillings, and such annual subscription shall become due and payable in advance on the first day of January in each year.

Par. 5.—Any member who shall be three months in arrear with his subscription, after due notice given, shall not be entitled to any privilege of membership until his subscription has been paid. Any member who is six months in arrear with his subscription may be struck off the roll of membership by a vote of the members of the Association then present. No person shall be entitled to vote at any meeting until he has paid his subscription.

Par. 6.—A member may be struck off the roll of membership by

a vote of the Association for an infraction of the Rules for the time being in force, or working against the interest of the Association directly or indirectly, or of the Bye-Laws from time to time framed by the committee.

Par. 7.—The officers of the Association shall consist of a president, two vice-presidents and a committee of fifteen members, who shall be elected at a meeting of members to be held in the month of January of each year. The committee shall have power to fill any vacancy in their number caused by death, resignation, or absence of any member from three consecutive meetings without leave of absence granted. Any appointment so made shall be subject to the confirmation of the next ensuing general meeting.

Par. 8.—The committee shall have power to transact all business on behalf of the Association, and especially:—

- (a) To collect and disseminate information of value to the Association.
- (b) To represent the needs and wishes of potato growers to Government, the shipping companies, agents, dealers, etc.
- (c) To make, rescind, and vary Bye-Laws for the government of the Association, and for the better carrying into effect of its objects, and also Rules for its own government.
- (d) To impose penalties for the breach of Rules or Bye-Laws, subject, however, to a right of appeal to a general meeting of the Association.
- (e) To appoint "office-bearers."

Par. 9.—The committee shall have a meeting whenever deemed necessary, and at such meeting five members shall form a quorum.

Par. 10.—A special meeting of the committee shall be called by the secretary, and held whenever directed by the president or vice-presidents, or when a meeting shall be requested by two members of the committee in writing.

Par. 11.—The annual general meeting of the Association shall take place yearly in the month of January, or as soon thereafter as possible. The business of such meeting shall be to receive and consider the report of the committee, a statement of receipts and expenditure, to appoint a president, vice-president, and committee, and such other business as shall be set out in the notice calling the meeting.

Par. 12.—A special general meeting shall be held whenever so directed by the committee, or when a requisition signed by not less than five members shall be received requiring such a meeting to be held.

Par. 13.—All questions arising at any general meeting of members shall be determined by a majority of the votes given by the persons present and entitled to vote.

Par. 14.—Ten days' notice of all general meetings shall be given

by post to each member of the Association, and no "important business" shall be transacted at any such meeting, but such as is indicated in the notice calling the meeting.

Par. 15.—These Rules shall not be added to, altered or amended, save when one-third of the members of the Association are present at any general meeting called for the purpose.

The President and Secretary of the Association are Messrs. H. Wortmann, Singleton, and A. Meyer, Wartburg, respectively.

---

## **Exchange Reviews.**

---

### WHAT OTHERS ARE THINKING AND DOING.

---

WE have received a copy of the *Transvaal Brands Directory, 1907*, which has been compiled by Mr. J. J. Pienaar, the Registrar of Brands, and issued as the fourth edition of Farmers' Bulletin No. 17 of the Transvaal Department of Agriculture. It contains a complete list of brands allotted and registered at the different Magistracies up to the 31st December, 1907. The Registrar of Brands, in his Introduction, states that a fairly large number of brands were allotted to natives outside native Locations in the Districts of Zoutpansberg, Waterberg and Barberton. These brands, along with the names and addresses of their respective owners, have been inserted at the end of the list of European brands appearing under the sections of those districts. An article is also included in the Bulletin on how to apply for and get brands registered, and how to brand.

---

### **"Phalaris Commutata" in Cape Colony.**

*Phalaris commutata*, the new perennial fodder grass to which we referred in our November issue, is being tried in Cape Colony, according to a note which appears in the January number of the *Cape Agricultural Journal*, Mr. James Gray, of "Waverley," Ceres Road, having imported some seed from Australia and experimented with the grass. Mr. Gray's experience is interesting and confirms the statements of experimenters in this Colony. He sowed the seeds about the end of January last in a row about three feet long. It came up in about ten days' time; it was kept well watered, and by the end of April stood about 18 inches high. It was then transplanted, the yield being 220 plants, which were planted in rows three feet apart, the plants being placed two



feet apart in the rows. An ordinary dressing of kraal manure was applied and afterwards a little superphosphate. In August Mr. Gray took up one of these plants and planted it on one of the driest spots of the farm, watering it for the first week. A very dry spring ensued, the earth was hard and the bush brown all around it at the time of writing (December 9th), yet this plant was still green and in full ear, standing about four feet high. Mr. Gray thinks that had it not been for the re-transplanting it would have done as well as the irrigated plots. Mr. Gray adds that the *Phalaris* stools planted last April are much bigger than his paspalum planted three years ago.

---

### **Nitrogen Content of Soils.**

In the Wisconsin Experiment Station Report for 1907 is given a continuation of observations begun in 1906, on the changes in the nitrogen content of a number of clay loam soils under the influence of continual cropping in a general system of farm management. Determinations of nitrogen in the cropped soil and in similar virgin soil are given.

---

The results show in general that the largest loss of nitrogen has occurred in those soils which ordinarily contain a rather large percentage of nitrogen. In 16 out of 21 cases in which the virgin soil contained 0.2 per cent. of nitrogen, or over the loss of nitrogen above that removed by crops, probably due chiefly to denitrification and leaching, exceeded 500 lbs. per acre. In 21 out of 26 cases in which the virgin soil contained less than 0.2 per cent. of nitrogen the loss of nitrogen was less than 500 lbs. per acre. The average losses were 29.6 per cent. of that removed by crops in 1907 and 22.3 per cent. in 1906. The loss of nitrogen about that removed by crops was greater when the soil was manured than when no manure was applied. "This seems to indicate that the nitrogen added in the form of manure, as ordinarily applied, does not accumulate in the soil, and suggests the desirability of a very careful study of the methods of applying farmyard manure to determine whether it should be applied in very small quantities annually, or larger amounts at intervals of 4 to 6 years, as is the customary practice."—(*Expt. Sta. Rec.*)

---

### **The Keeping of Apples.**

In Bulletin No. 135 of the New Hampshire Experiment Station, reviewed in No. XLVIII. of the *Experiment Station Record*, Professor F. W. Morse brings out in a very striking manner the fact that the steady loss of weight which fruits such as apples undergo even under most favourable conditions in storage is due to a process of breathing similar to that occurring in animals, whereby oxygen is taken in and

carbon dioxide given out. This breathing or respiration is stated to be "partly a chemical reaction, and in apples, like most chemical reactions in the laboratory, it grows more rapid as the fruit becomes warmer and is slowed down when the fruit is cooled." Prof. Morse's experiments indicate that these chemical changes "takes place from four to six times as fast at summer temperatures as in cold storage, and from two to three times as fast in cool cellars as in cold storage."

"It is frequently the case," Prof. Morse remarks, "that warm days with temperatures of 70 deg. F. occur in October, and sometimes continue for a considerable period. Fancy apples intended for long keeping in cold storage should be cooled as soon as possible and kept cold. The breathing process is at the expense of cell contents and must weaken the keeping qualities as it goes on. And this destructive action is from four to six times as fast out of cold storage as inside it. Another fact in connection with the respiration is important. It is not stopped in cold storage, but simply slowed. Apples cannot be kept indefinitely, but keep about twice as long in cold storage as in a cool cellar."

### **A Cattle Spraying Machine.**

In the September issue of the *Cape Agricultural Journal* there appeared a short description, by Mr. C. P. Lounsbury, the Government Entomologist, of the Seabury Cattle Spraying Machine; and in the December number Messrs. Wm. Cooper, B.A., F.C.S., F.Z.S., and Messrs. H. E. Laws, B.Sc., F.I.C., describe the working of these machines, one of which have been installed at Messrs. Wm. Cooper & Nephews' farm, "Gonubie Park," near East London.

The machine consists of a tunnel (9 ft. in length and 6 ft. 4½ ins. in height), which acts as a passage for the cattle. This tunnel is 14 inches wide along the floor, increasing in width gradually to the height of 2 ft. 1 inch, where it is 1 ft. 11 in. wide. From this point the tunnel bulges out considerably on both sides, measuring 3 ft. 3 in. across its widest part. When once the beast is in the tunnel, it is almost impossible for it to turn, owing to the bottom portion, up to the height of just over 2 feet, being so narrow. Along the inside of the sides of the tunnel are several series consisting in all of twenty terminals of one-foot pipes, attached to which are hemispherical screwcaps, which act as nozzles and through which the spray fluid is pumped. There are also two of these terminals and nozzles in the floor of the machine. The spraying fluid is delivered through the nozzles by means of a centrifugal pump, working at 1,200 revolutions per minute, fitted with a 3¼ inch suction pipe about 3 ft. 6 in. to 4 ft. long and 2¾ in. discharge pipe. The engine driving the pump is a 15-h.p. gasoline, made by Messrs.

Fairbanks, Morse & Co. An electric prod is used for urging reluctant cattle into the tunnel.

---

Experiments are now being carried out to ascertain the efficiency of the machine compared with that of the ordinary cattle dipping tank. For this purpose, a variety of dipping fluids are being used to discover the difference in action, if any, on the cattle when this new method of spraying is adopted, as against when the cattle are dipped; but from their experiments in its use, Messrs. Cooper & Laws state, up to the present the machine is disappointing. They are, however, endeavouring to make such alterations in connection with the positions and numbers of the nozzles, etc., so that the machine can be so modified as to be of practical use to South African cattle farmers residing in tick-infested areas.

---

### **Dry Rot of Maize.**

According to T. J. Burrell and J. T. Barrett, of the Illinois Experiment Station, a circular by whom is noticed in *Experiment Station Work*, No. XLVIII., the group of diseases of maize known under the general name of dry rot has become of sufficient economic importance during the past four years to cause general concern among farmers in maize-growing areas in the United States. The name "dry rot" is derived from the way the cobs are affected in the field. In general the husks tend to turn prematurely yellow to sooty, and the cob becomes partially or wholly shrivelled and much decreased in weight. Sometimes the cobs remain upright with the husks closely adhering to them. In other cases the shanks are weakened and the effected cobs hang limp from their attachment, or the diseased condition may not be detected until the husk is removed.

---

The chief cause of dry rot is a fungus, known as *Diplodia maydis*. Cobs infected with this fungus "shrive up more or less, darken in colour, and become light in weight. The kernels are also shrivelled, very brittle, and loosely attached to the cob." There are several other and less important forms of dry rot, due chiefly to fungi of the genus *Fusarium*. "In the case of the *Diplodia* disease, and quite probably in that of the other forms, the fungus perpetuates itself over winter on the old diseased ears [cobs] and old stalks. It is not usually difficult to find throughout the summer in old corn fields, where the disease has previously prevailed, many pieces of old cornstalks which are infected with the *Diplodia* fungus." Diseased cobs, we read, are fruitful sources of subsequent infection and should be removed as promptly as possible. "Keep them

in a separate receptacle, and burn them as soon as practicable. In addition to this, in fields where any considerable amount of disease has been found, the stalks should also have attention, whatever crop is to follow. Something may be gained by carefully ploughing them under and leaving them well covered, but burning may be required even if this is otherwise bad procedure. Such a field should not be replanted to corn [maize] for at least two years." If the first suggestion is always followed and the others are put into practice whenever necessity demands it, these serious losses may, it is stated, be practically prevented.

---

### **Co-operative Marketing of Citrus Fruits.**

The November issue of the *Agricultural Gazette of New South Wales* contains some interesting notes, received from California, on the Co-operative Marketing of Citrus Fruits in the United States. The notes deal wholly with the rise and development of the great Californian marketing organisation—the Californian Fruit-Growers' Exchange. The Exchange, we read, was founded upon the theory that every member was entitled to furnish his *pro rata* of the fruit for shipment through his association, and every association its *pro rata* of the various markets of the country. The theory reduced to practice gives every grower his fair share, and the average price of all markets throughout the season. Another cardinal provision of the plan was that all fruit should be marketed on a level basis of actual cost, with all books and accounts open for inspection at the pleasure of the members. These broad principles of full co-operation constitute the basis of the Exchange movement.

---

The Exchange system is simple, but quite democratic. The local association consists of a number of growers contiguously situated, who unite themselves for the purpose of preparing their fruit for market on a co-operative basis. They establish their own brands, make such rules as they may agree upon for grading, packing, and pooling their fruit. Usually these associations own thoroughly equipped packing houses. All members are given a like privilege to pick and deliver fruit to the packing house, where it is weighed in and properly receipted for. Every grower's fruit is separated into different grades, according to quality, and usually thereafter it goes into the common pool, and in due course takes its percentage of the returns according to grade. There are more than eighty associations, the several associations in a locality uniting to form an Exchange, which serves as a medium, and to a certain extent as a buffer, between the associations and the general Exchange.

---

During the fourteen years of co-operation in the marketing of citrus fruits under the Exchange system, the output of the State has increased



from 4,100 in 1892-3 to 31,791 cars (including Northern California shipments) during the season of 1904-5, with a prospect of a still further increase in the volume of shipments in the very near future. Marketing the fruit for its growers at actual cost, the Exchange has been able to bring about a great reduction in packing and selling charges, with the result that the average cost per box of both packing and marketing oranges to Exchange growers has during recent years averaged around 35 cents as against 75 cents per box at the time the Exchange was organised, when the charges by speculative shippers for packing alone was 40 to 50 cents per box, to which was added 7 to 10 per cent. commission on the delivered price.

---

Capital is material used for the purpose of producing further material. Wealth is material used for satisfying wants. Thus, Capital may produce further Capital, or it may produce Wealth.

---

The preparation of potash as a by-product of sunflower culture is one of the industries of Northern Caucasus. The potash is prepared by lixiviation of ashes of the stalks, stems, leaves, etc., of the sunflower, evaporation of the solution, and calcination of the residue. Twenty-four factories in Caucasia in 1907 produced about 12,600 to 16,200 tons of potash. About one-fourth of the product is used in Russia, and the rest is shipped to foreign countries.

---

TICK PARASITE.—Officials of the Bureau of Entomology of the United States Department of Agriculture have discovered that certain kinds of stock-infesting ticks in Texas are subject to the attack of an internal parasite, and have signified their willingness to assist in getting this beneficial creature established elsewhere. In its adult stage the parasite (*Ixodiphagus texanus*) is a tiny winged insect, somewhat similar in appearance to the parasites which most commonly affect scale insects. It is not known yet whether or not it attacks the very common cattle tick of Texas, which is closely allied to the so-called Blue Tick of South Africa, but it has been bred from kinds in the same genera as the Dog Tick and the Brown Tick. No other true parasite of ticks has anywhere been discovered.

## **Science and the Farmer.**

### NOTES OF INTEREST BY FARMING EXPERTS.

*\* \* Under the above heading we propose to publish each month in future short paragraphs on subjects of interest to the practical farmer, by recognised experts in agriculture and allied sciences.*

A perfect rotation should include all those crops which the soil, climate, and situation of the farm will admit of being cultivated at a profit. The conditions which influence the species of crops grown are, (a) the nature of the soil, (b) the character of the climate, (c) the kinds of live stock kept, and systems of management, (d) the demand for certain crops and the convenience for marketing them.—*Prof. J. Scott.*

In general, it may be said that an abundant supply of phosphoric acid and potash, especially the former, tends to increase fruitfulness, hardness and firmness of leaves and stems, while an abundance of nitrogen has a tendency to produce just the reverse conditions; and while the plant cannot be at its best without a suitable supply of nitrogen, the plants which are grown chiefly for their fruits may be easily injured by an amount only slightly exceeding a sufficiency.—*Prof. I. P. Roberts.*

#### THE SITUATION OF THE FARM.

The situation of a farm—the altitude of it, the climate to which it is subject, the aspect, whether toward or away from the sun, and the shelter, whether natural or artificial, with which it is supplied—is of greater moment than many men seem to be aware of. A farm unfavourably situated in these respects is more or less cold, and therefore detrimental for stock, and will not produce herbage so varied, and plentiful, and nutritious as will be found elsewhere.—*Professor J. P. Sheldon.*

#### SPAYED AND UNSPAYED SOWS.

To the feeder, the buyer, or the butcher, unspayed sows are usually, in one way or another, a cheat, as they may weigh more than they are worth by having a litter of pigs in them, or may be utterly destitute of inside fat, from having recently suckled pigs; in either case they are of less value than their appearance would indicate. Spayed sows are not troublesome to their mates, are as good as they look for feeding or marketing, and command in all markets such prices as are paid for none but first-class stock.—*F. D. Coburn.*

---

BUILDING UP A DAIRY HERD.

With a limited capital it is a good practice to buy second-class cattle of the right sort, and "grade them up," to use an American term, by using good bulls. In this way a man's herd improves each year, after the first two or three, and he has the satisfaction of seeing it improve. Half the pleasure of farming is missing, to my mind, if a man's cattle are so good to begin with that he cannot improve them. Besides, if he buys second-class cattle at a second-class price, he invests a capital which, small to begin with, increases under his eyes, as the improvement goes on.—*Prof. J. P. Sheldon.*

---

## TURNIPS FOR DAIRY COWS.

Butter has often a bad taste given to it through various causes, turnips, especially the Swedish variety, being the principal. By far the best way we know of to prevent turnips from giving their flavour to the milk, is to refrain from feeding the cows with this root *before* the milking, and give them turnips after the milking is finished, so that some hours will elapse before the milk is taken from them. Saltpetre put into turnippy-tasted milk is said to get rid of the taste. A tablespoonful per half gallon of milk of a solution of half an ounce of chloride of lime in a gallon of water, is also said to be a certain cure for bad-tasted milk.—*R. Scott Burn.*

---

## TILLING POTATOES.

Almost invariably judicious cultivation of potato land is profitable. It is secondary to good preparation of the land. The object is not primarily to destroy weeds, although this may be a consideration. To-day intelligent farmers till to increase yield. Tillage is manuring . . . but in its entirety is not necessarily a good practice. Tillage destroys humus, and as this is one of the most essential constituents of a good potato soil, a rotation of crops is advised to aid in maintaining the supply. Tillage may be overdone, especially deep tillage in dry weather. During such a time only sufficient shallow tillage should be given to maintain a mulch. — *Samuel Fraser, Assistant Agronomist, Cornell University.*

---

## SHEEP FOR MEAT PRODUCTION.

It is necessary for the particular disposition of flesh and fat production that the breathing power of the animal [sheep] should be limited, because a too conspicuous inhaling of oxygen expedites the decomposition of albumen, which would be detrimental to the flesh-production. The amount of inhaled oxygen is dependent on the amount of room allowed for the lungs for expansion. The more confined this is, the smaller are the lungs, and the consequence is that the

less oxygen can be inhaled. The activity of the lungs must be restricted in every way. A sheep, therefore, to be particularly adapted for flesh-production, must possess a proportionately small chest, which, of course, is invariably the case.—*Alfred Hawkesworth.*

---

#### AGRICULTURE AND CAPITAL.

People will have it that agriculture does not “pay.” It does not, very likely, on the old lines. But no calling pays better in small hands when there is plenty of money to work it with. Only, in all our callings—agriculture has been the last to learn the lesson—the rule of the present day is: you must have plenty of *working capital*. It is not the food which just supports the life of a beast which earns a profit, but the extra hundredweight of cake or meal which lays on the flesh and fat. It is not mere delving or ploughing of the soil that makes farming remunerative, but the manure put into it. And of such fertilising material the last bag or hundredweight earns a profit out of all proportion to that earned by preceding ones. . . . Of course, judicious employment must be taken for granted. But all knowledge and skill, all foresight and calculation will be thrown away if we have not got the money.—*Henry W. Wolff.*

---

#### THE VALUE OF STATISTICS.

Every advance in the perfection of statistics and the rapidity of collection makes more certain the bargain of every producer and consumer. People have sometimes opposed the gathering of statistics for fear that large dealers and speculators may take unfair advantage from such information. But a careful consideration will show that managing of the market depends chiefly upon want of information on one side of the bargain. If farmers were as thoroughly informed as to the crops of the world as carefully collected statistics might make them, no false rumours could mislead them in selling their produce. The evident tendency toward more stable markets, as shown by the records of the last twenty years, is accounted for partially, at least, by the more perfect information available. If farmers themselves would take interest in furnishing accurate estimates of the extent and condition of every product held for sale, they would in the long run reap the highest advantages of clearly understanding the supply and demand in the markets of the world. This would do more to destroy the demoralising force of mere speculation than any possible legal enactment.—*Geo. T. Fairchild, LL.D.*

---

The wealth of a community is judged by its fixed capital; its thrift by its circulating capital.



---

**Correspondence.**

---

**THE ELAND AS A FARM ANIMAL.**

---

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—In your last issue, under the heading "Notes and Comments," I read with interest your remarks about the eland and its value for draught power and beef. When travelling a few weeks ago in Rhodesia I met Mr. A. R. Jelliman, who is farming in the Maheki District, Mashonaland, and has had considerable experience in catching, training, and working the eland for draught purposes. He said that they were reliable, good workers, free from vice of any kind, and that he used them in his carriage in preference to horses. Mr. Jelliman was confident that the eland is the most valuable animal for work in South Africa, and expressed deep regret that they should have been allowed to be shot down as they have been in the past.

Mr. Sawyer deserves the highest praise for bringing to prominence the practically unknown value of the eland to farmers and the public generally.—Yours, etc.,

G. L. COVENTRY.

Acton Homes.

---

**"VAPORITE" FOR MEALIE GRUB.**

---

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—When sending me a consignment of their celebrated fertilizer in the spring of 1906, the South African - Fertilizers Co., of Durban, kindly gave me a pocket of Vaporite, which was supposed to kill the ground-grub or cut-worm. As I am not much bothered with this grub I had no opportunity of giving the Vaporite a trial, but when the time came for the top-grub (which are always bad on my farm) I gave the Vaporite a trial, and was so pleased with the result that I ordered 200 lbs., and, so as to give it a fair trial, I distributed a lot of it amongst my native tenants, who were much surprised at the way it killed the grub, and wherever I tried it myself it always proved most effective. In November, 1906, a plague of caterpillars cleared 4 acres of sweet potatoes and I did not think of trying Vaporite on them. However, two months later, after the potatoes had made a second growth, the caterpillars returned, when I gave them a light dusting of Vaporite, and two days after I found the pest had cleared.

Last year I tried Vaporite on the beetle pest eating the bloom off

the beans with splendid effect, but the best proof is to be seen in an eight-acre field of mealies which are looking just perfect at the present time which were one mass of grub early last December, but a light application of Vaporite cleared the grub.

I also put a small quantity of Vaporite in a small bag of mealies to see if it would keep out the weevil. Twelve months after I opened the bag and found every mealie sound and not a single weevil in the mealies. I am also of opinion that Vaporite is a splendid disinfectant, and during the Horsesickness season it would be well to have some in small, open tins in parts of the stable. This spring I had an opportunity of trying Vaporite on the ground-grub, which was most satisfactory. I intended sending you the result of my trials with Vaporite last year, but wanted to be quite sure before doing so, and now, after using it for two seasons, I am perfectly satisfied with its effectiveness, and shall get a supply every spring in the future.—Yours, etc.,

WILLIE NICHOLSON.

“Thedden,” Richmond.

---

### NOTTINGHAM ROAD HORSE FAIR.

---

TO THE EDITOR OF THE “AGRICULTURAL JOURNAL.”

SIR,—The Nottingham Road Farmers’ Association has every reason to feel gratified at the result of their initial horse fair held here on 18th November. The effort was successful in drawing buyers from all over South Africa, and, whilst a few reserves were too high, bidding was brisk, and horses to the value of £1,200 changed hands. The demand all through was good, showing the fair has filled a want, and the Association is in hopes a permanent market for horses has been established in this district, second to none in the Sub-continent, for the breeding and rearing of such. At the above sale, hacks realised up to 30 guineas, carriage pairs in harness up to 59 guineas, draught pairs in harness up to 50 guineas, entires up to 30 guineas.

These horse fairs are to be held every six months, the next one taking place in May, 1909. We are also holding a stallion sale in August, 1909.

Thanking you for the courtesy of the insertion of this in your widely read pages,—I am, yours, etc.,

WILLIAM WOOD,

For Horse Fair Sub-Committee of Nottingham Road  
Farmers’ Association.

“Woodfield,” Nottingham Road, Natal.

[We refer to the above matter in our “Notes and Comments” in this issue.]

---

MOLASSES FOR HORSES.

---

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—In your December number we read the interesting article, "Molasses for Horses."

We beg to point out to you that in America the conditions are not at all the same as in Natal. Where you can give 15 lbs. of crude molasses to a horse in America, such quantity would produce colic in Natal stock.

To prevent this, molassine meal was brought out, and with its antiseptic properties absolutely prevents colic.

The demand for molassine meal is so great in England that we have not only shipped the meal from here, but also hundreds of tons of treacle to be used for the manufacture of this molassine meal. Last year the sales in England amounted to 180,000 tons, and it seems a pity that Natal farmers are so slow in recognising the value of this meal.

We beg to enclose a brochure by Col. Nunn, the late P.V.O. of the British Army in South Africa, on sugar foods, which may be of interest to you and your readers.—Yours, etc.,

R. A. EBSTEIN,  
Managing Director, The Molassine Co.  
(South Africa), Ltd.

---

A WEEKLY AGRICULTURAL PAPER FOR NATAL.

---

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—For the past twelve months I have been a subscriber to the *American Agriculturist*, and many a time it has occurred to me that we farmers in Natal should be able to support a "weekly" issued on similar lines. I can hear you say, Yes! they don't support the present monthly journal sufficiently let alone a "weekly" one. But my contention is that if the present *Agricultural Journal* were altered into a weekly paper the increase in advertisements as well as increased subscriptions would cover the extra cost of production. At present the advertisements of your *Journal* are mostly "standing ads." from local firms. If we could get a weekly paper I think that every farmer who at present takes the *Journal*, and many others, would be prepared to pay 3d. per copy, i.e., 13s. per annum, for the advantage of getting his farming news weekly, and reading over the "fresh" advertisements which would appear in your columns under the headings of "Wanted," "For Sale or Exchange," etc. At present if the farmer wants to advertise his poultry, stock, or produce, he has to resort to several insertions in a "daily," and, owing to

the expense, he cannot always afford to place his "ads." in all the Durban and Maritzburg "dailies," and has to choose one only, and run the chance of a possible purchaser taking that particular paper. Then, again, the weekly reports as to how the crops in various districts are faring, and the market values of stock and produce, etc., would indeed be a boon to the producer as well as the consumer.

The Experimental Farms could be prevailed upon to give a *weekly* summary, and from time to time they might suggest to advantage the growing of certain sorts of crops in certain localities and soils, a subject which would be of service to all agriculturists.

I think that with a little persuasion from you through your columns, or in some instances at first you might have to resort to a personal letter, you could prevail on one farmer in each district to give you a *weekly* report as to how the crops, etc., were progressing in his district. This is the American system and a good one.

At present we receive the *Agricultural Journal* once a month. We read it through in an evening, it is then put away with the rest, and by the time the next one arrives we have practically forgotten the contents of the last one.

I must admit that your *Journal* as a monthly is excellent, and if we can support a "weekly" as well as a monthly so much the better; but if not, then I say that the *Agricultural Journal* turned into a weekly paper at a correspondingly higher rate of subscription would command far greater support than it at present does; and with these few remarks I will leave my subject in the hands of those it most interests.—Yours, etc.,

A FARMER.

---

## CAUSTIC SODA AND SULPHUR DIP.

---

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—Anent the recent discussion as to the merits of the Caustic Soda and Sulphur Sheep Dip, I enclose copy of a letter from Mr. T. H. Moore, of Messrs. Moore Bros., the well-known wool merchants and experts, of Huddersfield.

I would again draw the attention of farmers and wool dealers to Government Notice No. 1068, dated 8th September, 1908, issued by the Agricultural Department, Capetown, *viz.*:—

"The Government has decided to abolish the list of approved dips which has hitherto been published from time to time. The approval of the Department of ingredients for the eradication of Scab will in future be confined to:—1. Flowers of Sulphur; 2. Caustic Soda."

This notice is practically identical with the circular issued by the



Department of Agriculture for the Orange River Colony in September, 1907.

The approved formula for making sheep dip is:—5 lbs. Powdered Caustic Soda, 98/99 per cent. ("Thistle" brand); 20 lbs. Flowers of Sulphur (Brandrams, or equally good); 100 gallons water.—Yours, etc.,

M. S. PRICE.

The following is the letter from Mr. T. H. Moore referred to:—

"M. S. PRICE, Esq., P.O. Box 689, Capetown.

"Dear Sir,—Please accept my thanks for the reprint from *Cape Times* which you have so kindly sent me.

"Later experience of wool which has been subjected to the Soda and Sulphur Dip only confirms the opinion expressed in my report to the Government of the O.R.C., dated September 5th, 1907. Notwithstanding all that has been said in the Press and on the platform, I am quite satisfied that no farmer need fear any injury to his wool through using the dip in the manner recommended by the Government.—Yours truly,

"T. H. MOORE."

#### ALOE CULTIVATION IN NATAL.

TO THE EDITOR OF THE "AGRICULTURAL JOURNAL."

SIR,—I am afraid I cannot altogether agree with the contribution on "Aloe Growing," furnished by Mr. Leonard Acutt. It is a pity this gentleman did not add to his quota of knowledge, derived from his tour through Mauritius, by visiting the Aloe Estates in Natal. Comparison could then have been made, and useful information disseminated amongst those who are interested in fibre production.

The latter is a new industry in this country, and we have to grope somewhat in the dark in search of many important facts bearing on the growth of the *Furcraea*, but we are slowly learning useful lessons, which should be of benefit to us and others who embarked in this venture.

In the light of what we already know, I should therefore be sorry to see Mr. Acutt's suggestions taken up by the public, and the Aloe treated here as a weed, to be strewn broadcast on rocky ridges, and sterile slopes, over millions of unproductive acres! This proceeding would be the sure prelude to absolute failure, and Aloe-growing, already depressed by reason of various wild-cat schemes now happily defunct, would receive a set-back for years.

Fibre exported from Mauritius is appraised at a very low figure on the London market, and ranks mostly as tow, worth anything from £18 to £22 per ton. This is not surprising, considering the little cultivation, or proper treatment, given to the plant there during its growth, and in this connection I may say here that a well-known London buyer on

being shown a sample of clean and carefully brushed *Furcraea* fibre from Natal, would scarcely credit that it was "Mauritius hemp," stating that it was altogether superior to the island productions, and would be worth at least £10 a ton more. The moral of this is: The Aloe plant is in no sense different from tea, sugar, or wattles, and obeys the same invariable law, which is, that it responds to high-class cultivation and attention in an equally high ratio, and depreciates to the same extent when it is treated as a weed and forced to take its chance, bereft of any kindly husbandry.

Were your contributor to inspect our plantations in this county, we could bring these facts home to him, as they have been impressed on us, by dint of practical experience. This question of cultivation is one of the most useful lessons we have learnt, and another one is, that though Aloes may eke out a miserable or stunted existence on rocky plateaus, or where the soil is sandy and barren of constituents necessary to ordinary plant life, they fully appreciate good and rich soils just as other crops do, and cannot be classified with the Wild Aloe (*Umhlaba*). The latter was no doubt in Mr. Acutt's mind when he penned his article, which we submit was based on wrong premises.

When it is considered that, at the best, 100 lbs. of Aloe leaves will give not more than 4 per cent. of clean fibre, the vital necessity of the plantations being concentrated within as close an area as possible to avoid costly transport to the factory will readily be seen, and the futility of the suggestion to broadcast the bulbils over tracts far apart will also be appreciated. The neglect of this very important fact was the main cause of the collapse of at least one Aloe company in this district.

We wish to give due credit to your contributor for his well-meant and patriotic ideas for furthering the fibre industry in Natal, but as we are convinced that they are erroneous, and may do harm instead of good to the latter, we are impelled to state that Mr. Acutt's experience on the important points alluded to differ widely from our own.—Yours, etc.,

MANNING & COLLISON,

Per CLAUDE MANNING.

---

The best seed maize is gathered by taking the best cobs from the best stalks in the best hills. Go through the field early and make your selections.

**Coal and Labour Return.**

Return of Coal raised and Labour employed at the Natal Collieries for the month of December, 1908 :—

| COLLIERY.                | Average Labour Employed. |               |        |                     |        | Output.    |
|--------------------------|--------------------------|---------------|--------|---------------------|--------|------------|
|                          | Productive Work.         |               |        | Unproductive Work.* | Total. |            |
|                          | Above Ground.            | Below Ground. | Total. |                     |        | Tons. Cwt. |
| Natal Navigation ..      | 379                      | 658           | 1,037  | 15                  | 1, 52  | 32,397 0   |
| Elandslaagte ..          | 346                      | 629           | 975    | 18                  | 993    | 17,664 11  |
| Dundee Coal Co. ..       | 294                      | 445           | 739    | 33                  | 772    | 13,507 18  |
| South African ..         | 126                      | 311           | 437    | 64                  | 501    | 13,221 15  |
| Natal Cambrian ..        | 195                      | 360           | 555    | —                   | 555    | 11,467 10  |
| Glencoe (Natal) ..       | 213                      | 453           | 666    | 64                  | 730    | 11,414 9   |
| St. George's ..          | 254                      | 412           | 666    | —                   | 666    | 11,223 0   |
| Durban Navigation ..     | 160                      | 356           | 516    | —                   | 516    | 11,125 0   |
| Talana ..                | 119                      | 340           | 459    | 12                  | 471    | 7,037 17   |
| Newcastle ..             | 88                       | 414           | 502    | —                   | 502    | 6,785 17   |
| Natal Steam Coal Co. ..  | 85                       | 215           | 300    | 15                  | 315    | 5,415 12   |
| Hatting Spruit ..        | 90                       | 186           | 226    | 25                  | 251    | 3,687 12   |
| Ramsay ..                | 93                       | 216           | 309    | 20                  | 329    | 3,387 2    |
| West Lennoxton ..        | 67                       | 129           | 196    | —                   | 196    | 2,800 1    |
| Central ..               | 39                       | 71            | 110    | —                   | 110    | 1,147 17   |
| Zululand ..              | 35                       | 25            | 60     | —                   | 60     | 689 0      |
| Hlobane ..               | —                        | —             | —      | 431                 | 431    | 355 13     |
| Nooitgedacht ..          | 2                        | 3             | 5      | —                   | 5      | 10 0       |
| Vaalbank ..              | —                        | 4             | 4      | 4                   | 8      | 3 0        |
| Dumbi Mountain ..        | 2                        | —             | 2      | —                   | 2      | 2 0        |
| Totals .. ..             | 2,587                    | 5,177         | 7,764  | 701                 | 8,465  | 153,342 14 |
| Corresponding month, '07 | 2,629                    | 5,465         | 8,094  | 208                 | 8,302  | 160,684 12 |

|                 | Productive Work. |               |        | Unproductive Work. | Total, Dec., 1908. | Total, Dec., 1907. |
|-----------------|------------------|---------------|--------|--------------------|--------------------|--------------------|
|                 | Above Ground.    | Below Ground. | Total. |                    |                    |                    |
| Europeans .. .. | 185              | 137           | 322    | 88                 | 410                | 404                |
| Natives .. ..   | 880              | 3,345         | 4,225  | 527                | 4,752              | 4,240              |
| Indians .. ..   | 1,522            | 1,695         | 3,217  | 86                 | 3,293              | 3,658              |

\* Cost Charged to Capital Account.

Mines Department, Maritzburg, 9th January, 1909.

CHAS. J. GRAY,  
Commissioner of Mines.

## RETURN OF COAL BUNKERED AND EXPORTED.

Return of Coal bunkered and exported from the Port of Durban for the month of December, 1908 :—

|                  | Tons.   | Cwt. |
|------------------|---------|------|
| Bunker Coal ..   | 60,837  | 0*   |
| Coal Exported .. | 49,012  | 4    |
| Total            | 109,849 | 4    |

\* Includes 2·0 tons 0 cwt. taken by H.M. Warships.

\* .. 1,522 .. 3 .. .. Troopship.

Customs House, Port Natal, 4th January, 1909.

GEO. MAYSTON,  
Collector of Customs.

### Return of Farms at Present under Licence for Lungsickness and Scab.

| STOCK INSPECTOR.       | DISTRICT.           | DISEASE.     | OWNER.               | FARM.               |
|------------------------|---------------------|--------------|----------------------|---------------------|
| A. P. Crow ..          | Ladysmith ..        | Scab         | T. Kirkness ..       | Coaltontein         |
| A. B. Koe ..           | Portion of Estcourt | Lungsickness | W. Wright ..         | Maggiesdale         |
| A. C. Williams ..      | Utrecht ..          | Scab         | R. Mattison ..       | Calcote             |
|                        |                     |              | C. Tante ..          | Waterhoek           |
|                        |                     |              | B. & H. Hattingh ..  | Dageraad & Welgeoon |
|                        |                     |              | P. Delport ..        | Mooispruit          |
|                        |                     |              | L. Schwekkar ..      | Kalkrantz           |
|                        |                     |              | M. Prinsloo ..       | Waterveld           |
| H. Van Rooyen ..       | Ba'anango ..        |              | Macholo ..           | Driefontein         |
|                        |                     |              | W. Havemann ..       | Langfontein         |
|                        |                     |              | Mgantge ..           | Verdieid            |
|                        |                     |              | M op ..              |                     |
|                        |                     |              | W. Liveisag ..       | Langfontein         |
|                        |                     |              | Uyangt ..            | Verde veld          |
|                        |                     |              | Konksa ..            | Vaalbank            |
|                        |                     |              | Ngeta ..             | Pandasgrop          |
| J. G. Speirs ..        | Impendhle ..        |              | Pinda, Vete & Sobuon | Furth               |
| L. Trenor ...          | Alfred ..           | Lungsickness | Hitchins Bros. ..    | Thleku              |
|                        |                     |              | Sulwana ..           | L cation            |
|                        |                     | Scab         | Yalwayo ..           |                     |
|                        |                     |              | Dumas ..             | Location            |
|                        |                     | Lungsickness | M'Yango ..           | Ihluku              |
|                        |                     |              | Busak ..             | Izingolweni         |
|                        |                     |              | G. Logan ..          | T and No. 12        |
|                        |                     |              | J. M. gaan ..        |                     |
|                        |                     |              | Guhlano ..           | Location            |
|                        |                     |              | Pelusa ..            |                     |
|                        |                     |              | J. Fynn ..           |                     |
|                        |                     |              | M'Nyango ..          | Thluku              |
|                        |                     |              | Uy mbi ..            | Location            |
|                        |                     |              | Mlotshwa ..          | Msingopansi's Kraal |
|                        |                     |              | Hogg Bros. ..        | St. Mary's          |
|                        |                     |              | M. Clothier ..       | Slexcel             |
|                        |                     |              | T. m Fyn ..          |                     |
|                        |                     |              | E. M. Etheridge ..   | Sellhurst           |
|                        |                     |              | John Ryan ..         | Norourg             |
|                        |                     |              | A. Fynn ..           | Paande Kraal        |
|                        |                     |              | M. C. Zietman ..     | Ikayolami           |
|                        |                     |              | H. M. Raw ..         | Orange Grove        |
|                        |                     |              | Majavus ..           | T. Fynn's Location  |
|                        |                     |              | J. S. Payn ..        | Phoenix Park        |
|                        |                     |              | J. J. Oo-thuis ..    | The Gorge           |
|                        |                     |              | J. H. Payn ..        | Burnside            |
|                        |                     |              | Byel 's Kraal ..     | T. Fynn's Location  |
|                        |                     |              | H. M. Raw ..         | Eland Drift         |
|                        |                     |              | Byelas ..            | T. Fynn's Location  |
|                        |                     |              | Elij h ..            | She pwalk           |
|                        |                     |              | Mashuma ..           | Hoie                |
|                        |                     |              | R. Fann ..           | Blackwater          |
|                        |                     |              | F. Mziz ..           | Lot 1, Enquabeni    |
|                        |                     |              | E. Mzizi ..          | Lot "F," Enquabeni  |
|                        |                     |              | J. T. Clothie ..     | Whiteiff            |
| A. S. Parkinson ..     | Lion's River ..     | Scab         | A. C. Thomson ..     | Lion's Bush         |
| C. T. Vaughan ..       | Paulpietersburg ..  |              | B. Greene ..         | Mansfield           |
|                        |                     |              | P. Allen ..          | Welverdiend         |
|                        |                     |              | C. Labusch gne ..    | Pivaan              |
|                        |                     |              | W. F. Marfoss ..     | Blinkwa er          |
|                        |                     |              | J. E. Rudolph ..     | 1 osc. i Krans      |
|                        |                     |              | M. Creig ..          | Elandsberg          |
| R. Wingfield Stratford | Newcastle ..        |              | Tom Laa e ..         | Straisvogel Kop     |
|                        |                     |              | G. van Niekerk ..    | Rattlekloof         |
|                        |                     |              | R. P. Botha ..       | Lekkewater          |
|                        |                     |              | M. Katzensteia ..    | Town Lands          |
| C. E. Walker ..        | Portion of Estcourt | Lungsickness | H. Cadie and others  | Se t fontein        |
|                        |                     | Scab         | Thos. Hindle ..      | W i low Grange      |
|                        |                     | Lungsickness | N. C. H. Little ..   | Leighton            |
| G. Daniell ...         | Vryheid ..          | Scab         | Hlomvendhluni ..     | Du-oblerecht        |
|                        |                     |              | J. M. Koekmore ..    | Hardetaald          |
| J. R. Cooper ..        | Nkandhla & Nqutu    |              | K. Umsinengo ..      | Mquzini             |
|                        |                     |              | L. Mloyi ..          | M gabeni            |
|                        |                     |              | S. Mboyi ..          | Mqazini             |



RETURN OF FARMS UNDER LICENCE (*Continued*).

| STOCK INSPECTOR.   | DISTRICT.          | DISEASE.     | OWNER.              | FARM.              |
|--------------------|--------------------|--------------|---------------------|--------------------|
| J. R. Cooper ..    | Nkandh'a & Nqutu   | Scab         | B. Bunting .. ..    | Nqudeni            |
|                    |                    | "            | S. Molife .. ..     | Haladu             |
|                    |                    | "            | M. Malagwano ..     | Blood River        |
|                    |                    | "            | Langa .. ..         | Batshi             |
|                    |                    | "            | Linjaza .. ..       | Telezi Hill        |
|                    |                    | "            | L. Molife .. ..     | "                  |
|                    |                    | "            | H. Sutton .. ..     | Masinkoms          |
|                    |                    | "            | Westbrook Bros. ..  | Dawin              |
| B. Klusener .. ..  | Port Shepstone ..  | "            | B. Scott .. ..      | Murchison          |
| E. Varty ... ..    | Western Umvoti ..  | Lungsickness | Mabija .. ..        | "                  |
|                    |                    | "            | H. Hansmeyer ..     | On Rust            |
|                    |                    | Scab         | W. J. Slatter ..    | Holm Lacy          |
|                    |                    | "            | F. H. Van Rooyen .. | Thorn View         |
|                    |                    | "            | P. H. Van Rooyen .. | Buricks            |
|                    |                    | "            | T. J. Martens ..    | Greenkop           |
| K. Ripley .. ..    | Emtonjaneni ..     | "            | Nhlangana .. ..     | Mangwaza M.S.      |
|                    |                    | "            | Balem .. ..         | Mfuli M.S.         |
|                    |                    | "            | Janga .. ..         | Mangwaza M.S.      |
|                    |                    | "            | Patakali & David .. | Rus everwreht      |
|                    |                    | "            | Ndat mbi .. ..      | "                  |
|                    |                    | "            | Uzwe injani ..      | "                  |
| A. Hair .. ..      | City and Umgeni .. | "            | Unjabo .. ..        | Zwaartkop Location |
| J. F. van Rensburg | Ngashe .. ..       | "            | Jakob .. ..         | Zalager            |
|                    |                    | "            | T. C. Va Rooyen ..  | Welkom             |
|                    |                    | "            | Simon .. ..         | Smaa deel          |
| J. Stewart ..      | Bergville .. ..    | Lungsickness | F. R. Stockie ..    | Riv Vlei           |
| E. W. Larkan ..    | Umsinga .. ..      | Scab         | J. J. Strydom ..    | Hester             |
|                    |                    | "            | T. H. Delekuil ..   | omerset            |
|                    |                    | "            | Am s Nahlovu ..     | Nazareth           |

## MANGE IN HORSES EXISTS AS UNDER

| Owner.                  | Farm.      | District.  |
|-------------------------|------------|------------|
| Pinda, Vete & Sobuon .. | Strathson  | Impendhle  |
| Natives .. ..           | Olivefonte | Umvoti     |
| Natives .. ..           | Tetworth   | Lion's Riv |
| Natives .. ..           | Spitzkop   | Vryheid    |

**Brands Allotted to Infected Magisterial Divisions.**

The following is a list of the brands which have been allotted to the several infected Magisterial Divisions:—Durban County, D. 2; Alexandra County, A. 2; Lower Tugela, T. 2; Mapumulo, S. 2; Inanda, B. 2; Umsinga, U. 2; Dundee, X. 2; Vryheid, V. 2; Ngotshe, H. 2; Paulpietersburg, P. 2; Nongoma, G. 2; Mahlabatini, L. 2; Ndwedwe, N. 2; Weenen County, W. 2; Umvoti, F. 2; Hlabisa, K. 2; Eshowe, E. 2; Ladysmith, R. 2; Babanango, O. 2; Ladysmith, East of Line outside infected area, R. 3; Utrecht, Z. 2; Krantzkop, 2 K.; Umvoti Location, 2 F.; Ladysmith, West of main line of Railway, R. 3 on left neck; Pietermaritzburg City, 2 P.; Umlazi Location (Upper Umkomanzi portion), 2 U.; Umgeni Division, west of line, J. 2; Lion's River, east of line, 2 H.

## Meteorological Returns.

*Meteorological Observations taken at Government Stations for Month of December, 1908.*

| STATIONS.         | TEMPERATURE (IN FAHR. DEGS.). |          |                    |                    | RAINFALL (IN INCHES). |              |                             |      |                                     |                                            |
|-------------------|-------------------------------|----------|--------------------|--------------------|-----------------------|--------------|-----------------------------|------|-------------------------------------|--------------------------------------------|
|                   | Means for Month.              |          | Maximum for Month. | Minimum for Month. | Total for Month.      | No. of Days. | Heavy strain-fall in 1 day. |      | Total for Year from July 1st, 1908. | Total for same period from July 1st, 1907. |
|                   | Maximum.                      | Minimum. |                    |                    |                       |              | Fall.                       | Day. |                                     |                                            |
| Observatory ..    | 81.9                          | 67.2     | 88.7               | 61.6               | 3.45                  | 19           | .92                         | 7th  | 19.52                               | 19.28                                      |
| Stanger ..        | 84.4                          | 67.6     | 103                | 62                 | 5.02                  | 19           | 1.44                        | 6th  | 20.90                               | 22.66                                      |
| Verulam ..        | 86.7                          | 66.8     | 97                 | 61                 | 4.06                  | 16           | 1.40                        | 22nd | 20.66                               | 19.79                                      |
| Greytown ..       | 82.9                          | 54.6     | 95                 | 48                 | 4.26                  | 16           | 1.15                        | 1st  | 19.37                               | 18.70                                      |
| Lidgettton ..     | 81.8                          | 55.1     | 95                 | 43                 | 3.96                  | 17           | 1.08                        | 22nd | 17.43                               | —                                          |
| Estcourt ..       | 87.7                          | 58.1     | 98                 | 50                 | 1.78                  | 10           | .35                         | 1st  | 12.88                               | 13.38                                      |
| Bulwer ..         | —                             | —        | —                  | —                  | 7.59                  | 20           | 2.12                        | 22nd | 26.67                               | 22.74                                      |
| Uxopo ..          | —                             | —        | —                  | —                  | 3.07                  | 15           | .69                         | 22nd | 18.83                               | —                                          |
| Mid-Illovo ..     | 79.9                          | 60.0     | 97                 | 53                 | 3.80                  | 16           | .67                         | 7th  | 21.33                               | 21.96                                      |
| Port Shepstone .. | 83.9                          | 61.2     | 90                 | 55                 | 3.63                  | 11           | .75                         | 4th  | 24.56                               | 18.70                                      |
| Umzinto ..        | 88.1                          | 59.2     | 100                | 55                 | 2.82                  | 11           | .84                         | 6th  | 21.59                               | 17.83                                      |
| Richmond ..       | 79.7                          | 58.2     | 97                 | 53                 | 6.08                  | 19           | 1.20                        | 6th  | 24.99                               | 23.95                                      |
| Maritzburg ..     | 83.0                          | 59.9     | 102                | 51                 | 3.50                  | 17           | 1.10                        | 22nd | 16.18                               | 19.81                                      |
| Howick ..         | 81.0                          | 57.8     | 93                 | 47                 | 3.89                  | 16           | .85                         | 22nd | 17.57                               | 21.31                                      |
| Dundee ..         | 87.4                          | 59.3     | 95                 | 51                 | 5.60                  | 10           | 2.42                        | 7th  | 18.19                               | 18.57                                      |
| Weenen Gaol ..    | 96.5                          | 59.8     | 107                | 52                 | 2.57                  | 14           | 1.08                        | 21st | 15.39                               | 13.69                                      |
| Charlestown ..    | 78.4                          | 53.3     | 85                 | 45                 | 3.86                  | 15           | .85                         | 12th | 17.43                               | 17.54                                      |
| New Hanover ..    | 86.7                          | 59.5     | 100                | 50                 | 3.72                  | 16           | 1.26                        | 22nd | 20.31                               | 22.12                                      |
| Krantzkloof ..    | 79.0                          | 62.3     | 91                 | 56                 | 3.49                  | 19           | .84                         | 7th  | 20.05                               | —                                          |
| Krantzkop ..      | 87.8                          | 70.0     | 95                 | 64                 | 3.72                  | 13           | 1.05                        | 29th | 15.55                               | —                                          |
| Nqutu ..          | 80.2                          | 53.3     | 89                 | 47                 | 5.88                  | 10           | 1.48                        | 28th | 18.76                               | 14.25                                      |
| Vryheid ..        | 88.5                          | 58.0     | 101                | 51                 | 4.41                  | 10           | 1.20                        | 23rd | 21.40                               | 19.20                                      |
| Mtunzini ..       | 86.9                          | —        | 101                | —                  | 6.55                  | 10           | 1.76                        | 17th | 30.98                               | 29.18                                      |
| Hlabisa ..        | 82.6                          | 62.5     | 92                 | 55                 | 4.86                  | 10           | .95                         | 16th | 20.07                               | 18.40                                      |
| Ubonbo ..         | 85.4                          | 62.4     | 100                | 55                 | 6.00                  | 7            | 2.37                        | 30th | 20.85                               | 19.35                                      |
| Point ..          | —                             | —        | —                  | —                  | 5.35                  | 19           | 1.67                        | 6th  | 24.08                               | 22.54                                      |
| Mahlabatini ..    | 83.5                          | 49.7     | 92                 | 46                 | 5.00                  | 10           | 1.68                        | 6th  | 16.98                               | 17.20                                      |
| Empangeni ..      | 88.5                          | 64.5     | 102                | 56                 | 4.00                  | 3            | 2.54                        | 30th | 21.82                               | 20.98                                      |

*Meteorological Observations taken at Private Stations for Month of December, 1908.*

| STATIONS.                      | TEMPERATURE (IN FAHR. DEGS.) |                    | RAINFALL (IN INCHES). |              |                              |      |                                     |                                            |
|--------------------------------|------------------------------|--------------------|-----------------------|--------------|------------------------------|------|-------------------------------------|--------------------------------------------|
|                                | Maximum for Month.           | Minimum for Month. | Total for Month.      | No. of Days. | Heaviest rain-fall in 1 day. |      | Total for Year from 1st July, 1908. | Total for same period from July 1st, 1907. |
|                                |                              |                    |                       |              | Fall.                        | Day. |                                     |                                            |
| Adamshurst ..                  | 99                           | 45                 | 2.96                  | 14           | 0.5                          | 26th | 14.51                               | 17.01                                      |
| Hilton ..                      | 94                           | 50                 | 4.50                  | 21           | 0.78                         | 22nd | 18.34                               | 21.77                                      |
| P. M. B., Botanical Gardens .. | —                            | —                  | 4.3                   | 15           | 1.2                          | 22nd | 17.45                               | —                                          |
| Mount Edgecombe ..             | —                            | —                  | 2.24                  | 11           | 0.59                         | 23rd | 21.47                               | 23.43                                      |
| Cornubia ..                    | —                            | —                  | 3.4                   | —            | —                            | —    | —                                   | —                                          |
| Milkwood Kraal ..              | —                            | —                  | 1.17                  | —            | —                            | —    | —                                   | —                                          |
| Blackburn ..                   | —                            | —                  | 3.26                  | —            | —                            | —    | —                                   | —                                          |
| Saccharine ..                  | —                            | —                  | 3.15                  | —            | —                            | —    | —                                   | —                                          |
| Equeefa ..                     | 96                           | 55                 | 4.00                  | 16           | 1.05                         | 11th | 22.81                               | 22.66                                      |
| Umzinto, Beneva ..             | —                            | —                  | 4.13                  | 14           | 1.02                         | 10th | 21.50                               | 22.30                                      |
| Riet Vlei ..                   | —                            | —                  | 3.07                  | 12           | 1.40                         | 22nd | 14.43                               | 14.59                                      |
| Brankholme ..                  | —                            | —                  | 7                     | 17           | 1.35                         | 23rd | 29.42                               | 40.1                                       |
| Winkel Spruit ..               | 94                           | 60                 | 3.76                  | 15           | 0.67                         | 6th  | 21.31                               | 23.06                                      |
| Umhlangeni ..                  | 90                           | —                  | 4.95                  | 14           | 1.88                         | 11th | 25.31                               | —                                          |

## **Pound Notices.**

NOTIFICATION is contained in the *Government Gazette* of the sale, unless previously released, of the undermentioned live stock on the dates specified :—

ON THE 3RD FEBRUARY.

*Ashley* (Ixopo Division).—(1) Black ox, white on belly, four white feet. (2) Running on the farm Murchison, and reported by Mr. Peel as being too wild to be driven to the Pound at Ashley. Bay gelding, about 15 hands, off hind foot white stocking, near hind foot small white patch, a V shaped piece cut out of each ear, small star, and slight blaze, two old scars on back, harness marks on chest.

*Estcourt*.—(1) Six Kafir goats, no marks. (2) Three Kafir goats, no marks.

*Ingogo*.—Found straying by Natal Police, Spitzkop, and at present running on Natal Police Ground :—Sheep, ewe, very old, branded C.F. This sheep suffers from a broken leg, and is consequently very lame, and cannot be driven to the pound.

*Muden*.—(1) Black goat, no marks. (2) Black kid, no marks.

*Woodstock* (Bergville Division).—Chestnut mare, white star on forehead, right hind foot white, long tail and mane.

ON THE 17TH FEBRUARY.

*Geytown*.—Black ox, branded Z.S. (Impounded December 4th, 1908, by Mr. S. C. Van Rooyen, Greytown).

*Hatting Spruit*.—(1) Two white Kafir goats, ewes, tip off right ear, V out tip of left ear. (2) Black Kafir goat, ewe, tip off right ear and slit in front, V out tip of left ear.

*Mooi River*.—Running on the farm "Clifton," Willow Grange, and reported by Mr. H. D. Swan, Cross-bred merino ewe and lamb, grey face, and horns, both ears cut off, very indistinct brand on ribs.

*Muden*.—Two young black pigs, about three months old.

*Nqutu*.—Bay horse, gelding, black points, about 13 hands, has had a very bad saddle sore, barbed wire cut mark above knee, near side fore leg, in very poor condition, no brands.

*Utrecht*.—(1) Mouse coloured horse, star on forehead, 14 hands, 3 years old, near front foot white, two white hind feet, no marks or brands. (2) Black horse, 14.2, 8 years old, sore back, tail cut square, no marks or brands.

ON THE 24TH FEBRUARY.

*Vryheid*.—Impounded on Mr. Macleod's farm, and reported as too wild to be driven to the pound at Vryheid, grey stallion, about 13 hands.

ON THE 3RD MARCH.

*Ashley* (Ixopo Division).—Bay Gelding, about 14.2, star, near hind fetlock white, slit in right ear, branded — on left leg.

*Dundee*.—(1) Ewe sheep, branded M on right flank. (2) Lamb of foregoing.

*Good Hope* (Klip River Division).—Grey gelding, branded A.P. on left hind quarter, right front leg swollen at knee as if previously broken.

*Howick*.—Running on the farm Groote Vallie, and reported by Mr. G. Houston as too lame to be driven to the pound. Bay gelding, about 15 hands, aged, branded R on near hip, and shod all round.

*Richmond*.—Black pig (sow).

*Woodstock* (Bergville Division).—Running on the farm "Zuur Laager," and cannot be driven to the pound owing to the East Coast Fever Regulations, and reported by J. Halferty. (1) Black and white cow, two swallow tails on right ear and one swallow tail on left ear. (2) Red bull calf, calf of the above, two swallow tails on the right ear and one swallow tail on the left ear.

## **Government Laboratory.**

### SCALE OF CHARGES FOR ANALYSES, VACCINES, ETC.

The following is the scale of charges fixed for analyses, etc., at the Government Laboratory, Al erton, Pietermaritzburg : -

|                                                                                                                                  | £  | s. | d. |
|----------------------------------------------------------------------------------------------------------------------------------|----|----|----|
| Drinking-water Analysis :                                                                                                        |    |    |    |
| Chemical ... ..                                                                                                                  | 2  | 2  | 0  |
| Bacteriological ... ..                                                                                                           | 5  | 5  | 0  |
| Milk, Analysis ... ..                                                                                                            | 0  | 10 | 6  |
| Sputum, Bacterioscopic examination ... ..                                                                                        | 0  | 5  | 0  |
| Biological test for Tubercle ... ..                                                                                              | 1  | 1  | 0  |
| Throat-swabs for Diphtheria (prepared swabs obtainable on application) :                                                         |    |    |    |
| Bacteriological Report ... ..                                                                                                    | 0  | 2  | 6  |
| Urine, ordinary clinical examination ... ..                                                                                      | 0  | 5  | 0  |
| Quantitative estimation of glucose ... ..                                                                                        | 0  | 10 | 6  |
| Biological test for Tubercle ... ..                                                                                              | 1  | 1  | 0  |
| Fæces, for Ankylostomiasis ... ..                                                                                                | 0  | 2  | 6  |
| Blood (collecting outfit obtainable on application) agglutination test for Typhoid (Widal, Paratyphoid, Malta Fever, etc. ... .. | 0  | 5  | 0  |
| Tumours and Morbid Tissue :                                                                                                      |    |    |    |
| Microscopic examination ... .. 10s. 6d. to                                                                                       | 2  | 2  | 0  |
| Post Mortem examinations ... .. 10s. 6d. to                                                                                      | 5  | 5  | 0  |
| Toxicological examinations ... .. 10s. 6d. to                                                                                    | 21 | 0  | 0  |
| X-ray examinations, blood-counts, etc., by special arrangement.                                                                  |    |    |    |

The following sera, vaccines, etc., are issued at the prices indicated :—

|                                                                   | s. | d. |
|-------------------------------------------------------------------|----|----|
| Anthrax Inoculation, per double dose of two inoculations ...      | 0  | 6  |
| Anti-Diphtheritic Serum, per dose ... ..                          | 5  | 0  |
| Anti-Streptococcic Serum, per dose ... ..                         | 2  | 0  |
| Anti-Tetanic Serum, per dose ... ..                               | 2  | 0  |
| Mallein, per dose... ..                                           | 0  | 4  |
| Tuberculin, per dose ... ..                                       | 0  | 4  |
| Anti-Venene (for snake bites), per dose ... ..                    | 5  | 0  |
| Blue Tongue Vaccine, per 25 doses ... ..                          | 2  | 0  |
| Blue-Tongue Curative Serum, per 50 cub. c. ... ..                 | 2  | 6  |
| Quarter Evil Vaccine (in five and ten dose packets), per dose ... | 0  | 3  |
| Q. E. V., Double Inoculation, per dose ... ..                     | 0  | 6  |

Appliances for inoculations, syringes, etc., are also supplied from the Laboratory.



---

## ***Diamond Drilling.***

---

SOME of the departmental diamond drilling plants are at present disengaged and available for hire for boring for either minerals or water. Particulars as to terms of hire may be obtained from the undersigned.

CHAS. J. GRAY,  
Commissioner of Mines.

---

---

## ***Employment Bureau.***

---

THE Department of Agriculture has received applications from the undermentioned, who are prepared to become assistants or apprentices on farms. The Department will be glad to hear from farmers willing to take young men as assistants, and to place them in correspondence with the various applicants. Communications should be addressed to the office of this *Journal*.

No. 110.—Englishman, 39 years of age, gardener by profession, with knowledge of farming, desires employment on a farm. Appears to be a steady and reliable man.

No. 111.—Married man, 36, no children, desires managership of farm. Spent five years with Capt. Hayes, and is well acquainted with the management of horses, including racing horses. States he has sound veterinary knowledge and understands dairy, poultry, pig, and stock farming generally. South African experience, four years Cape Colony and one year Impendhle Division, Natal. Is prepared to work for month or two for board and lodging to prove capabilities, provided sound opening at end of that time.

No. 113.—Age 27, desires to obtain a start on a farm in Natal. Came to South Africa six months ago; attended the preliminary classes at the Glasgow and West of Scotland Agricultural College, and has also obtained a certificate for Theoretical Agricultural Chemistry. Is steady, and would be willing to work without any salary in order to obtain a practical knowledge of farming.

No. 115.—Englishman, 26 years of age, steady and an abstainer, with a knowledge of cattle and horses, wishes employment on a farm in Natal (English preferred) as a handy man, with a view to furthering his knowledge of farming in this country. Is willing to accept food and clothing in a good home, for services, for a few months with the prospect of a small wage after the first three months.

No. 116.—Cape man, age 32 years; married, no children. Has been used to working with horses and mules all his life. Has good papers from his previous employers, and was in the employ of the Public Works Department for over five years. Is willing to do anything in his power, but cannot read nor write.

No. 117.—Englishman, 25, of good education, desires appointment as overseer on a plantation in Natal, and would pay a reasonable premium and give services free for a few months if necessary. Has had commercial, engineering, surveying and mining experience.

---

Farmers requiring good, steady farm hands would do well to communicate with Ensign Anderson, of the Salvation Army Shelter, Maritzburg, who constantly has good men at the Shelter who would be glad of employment at reasonable rates. Ensign Anderson pledges himself not to recommend for employment any but those he is satisfied will give satisfaction to their employers. He will be pleased to enter into correspondence with any farmer who may address him on the subject.

## Government Cold Stores and Abattoirs.

### PIETERMARITZBURG.

It is notified for the information of Farmers and others that Government is prepared to receive Cattle at the Government Abattoir, Pietermaritzburg, for Slaughter and Storage, if necessary, upon the following Scale of Rates and Charges, or such of them as may meet the requirements of Cattle owners. It must, however, be understood that owners will be required to make their own arrangements for the sale of the meat of cattle sent in for slaughter, the Government being unable to offer facilities or to accept responsibilities in this regard.

Cattle may also be received for slaughter at the Government Abattoir, Point, Durban, at the charges noted below. As the Government is unable to offer facilities for cold storage at Durban, or for the sale of the meat of cattle sent for slaughter, it must be understood that owners will be required to make their own arrangements in these respects, and the Government is unable to accept responsibility in either regard at Durban.

|                                                                           | Calves<br>up to<br>One<br>Year<br>old. | Cattle<br>over<br>One<br>Year<br>old. | For minimum<br>number of 250<br>head per month. |                             | For maximum<br>number of 500<br>head per month. |                             |
|---------------------------------------------------------------------------|----------------------------------------|---------------------------------------|-------------------------------------------------|-----------------------------|-------------------------------------------------|-----------------------------|
|                                                                           |                                        |                                       | Under<br>300 lbs.<br>weight.                    | Over<br>300 lbs.<br>weight. | Under<br>300 lbs.<br>weight.                    | Over<br>300 lbs.<br>weight. |
|                                                                           | s. d.                                  | s. d.                                 | s. d.                                           | s. d.                       | s. d.                                           | s. d.                       |
| 1. Receiving ... .. per head                                              | 0 3                                    | 0 6                                   | 0 6                                             | 0 6                         | 0 3                                             | 0 3                         |
| 2. Killing and Cleaning ... ..                                            | 2 3                                    | 3 6                                   | 2 9                                             | 3 3                         | 2 6                                             | 3 0                         |
| 3. Labour ... ..                                                          | 0 3                                    | 0 6                                   | 0 3                                             | 0 6                         | 0 3                                             | 0 6                         |
| 4. Disinfectants ... ..                                                   | 0 1                                    | 0 1                                   | 0 1                                             | 0 1                         | 0 1                                             | 0 1                         |
| 5. Bagging (4 Quarters) ... .. per body                                   | 1 9                                    | 3 0                                   | 2 6                                             | 2 9                         | 2 3                                             | 2 6                         |
| 6. Cleaning of Tripes ... .. each                                         | 0 6                                    | 0 6                                   | 0 6                                             | 0 6                         | 0 6                                             | 0 6                         |
| 7. Chilling of Beef, up to 72 hours<br>or po tion thereof ... .. per body | 1 0                                    | 2 9                                   | 2 0                                             | 2 6                         | 1 9                                             | 2 6                         |
| 8. Chilling of Offal, up to 72 hours<br>or portion thereof ... .. per set | 1 0                                    | 1 0                                   | 1 0                                             | 1 0                         | 1 0                                             | 1 0                         |
| Chilling and Freezing Beef—                                               |                                        |                                       |                                                 |                             |                                                 |                             |
| 9. 1st week or portion thereof per body                                   | 2 0                                    | 4 6                                   | 3 9                                             | 4 0                         | 3 6                                             | 3 9                         |
| 10. 2nd " " " " "                                                         | 1 0                                    | 4 0                                   | 3 3                                             | 3 6                         | 3 3                                             | 3 3                         |
| 11. 3rd and remaining weeks or<br>portions thereof ... ..                 | 0 8                                    | 3 0                                   | 3 0                                             | 3 0                         | 3 0                                             | 3 0                         |
| Chilling and Freezing Offal—                                              |                                        |                                       |                                                 |                             |                                                 |                             |
| 12. 1st week or portion thereof per set                                   | 1 4                                    | 1 6                                   | 1 4                                             | 1 4                         | 1 4                                             | 1 4                         |
| 13. 2nd " " " " "                                                         | 1 0                                    | 1 3                                   | 1 0                                             | 1 0                         | 1 0                                             | 1 0                         |
| 14. 3rd and remaining weeks or<br>portions thereof ... ..                 | 0 9                                    | 1 0                                   | 0 9                                             | 0 9                         | 0 9                                             | 0 9                         |

A charge of 1s. per head is made in respect of any Sale of Cattle on leg at the Government Abattoir and a similar charge is made in respect of Bodies of Beef or portions thereof.

For further particulars, apply to the Manager, Government Cold Stores.

Department of Agriculture, Maritzburg,

21st December, 1908.

## ***East Coast Fever Advisory Committees.***

(NOTE.—Owing to sparse European population, the following Magisterial Divisions have no Advisory Boards: Ubombo, Mapumulo, Ingwavuma, Mahlabatini, Ndwandwe, Nkandhla and Hlabisa.)

ALEXANDRA.—Chairman: W Thompson, Umzinto. Members: H Bazley, R C Archibald, A Blamey, H Reynolds, G J Crookes, R Parkin, J A Curle.

ALFRED.—Chairman: Magistrate. Members: A G Prentice, Rev. S Aitcheson, J E Brown, F H Boddy, H M Raw, H Rethman, H C Hitchens, H J R Hatchwell, W P Bouserie.

BERGVILLE.—Chairman: T E Zunckel, J.P., Bergville. Members: P H Van der Riet, J G Fannin, H Jackson, C Halferty, F Zunckel, Mbulali—Consulting member for natives.

BULWER.—Chairman: Magistrate. Members: R Comrie, Wm Colville, R Gordon, H Cole, P Garson, P McKenzie, G Malcolm, H C Gold, R Justice, E Stafford, W Little.

CAMPERDOWN.—Chairman: A N Kirkman, Cato Ridge. Members: J F Erfmann, P J Kingham, W B Turner, C J A Scheepers, W Mercer, L G Wingfield Stratford, J W Harvey, B B Evans, J W V Montgomery, B R Buchanan, W L Stead. SUB-DIVISIONAL BOARDS.—*No. 1. East of Railway Line from "Spitskop" to Railway Line.*—Chairman: J F Erfmann, Cato Ridge. Members: P J Kingham, H Dinklemann, F L Meyer, J H Meyer, H A Meyer. *No. 2. East of Railway Line from West of Government Fence.*—Chairman: C J A Scheepers, Thorneybush. Members: W B Turner, W Mills, J F Scheepers, H Nadauld, G S Phipson. *No. 3. West of Railway Line from Koning Krantz to Killairney and along Umlaas River.*—Chairman: A N Kirkman, Clairmont. Members: W Mercer, W Brown, R Godfrey, W S Meyer, E W Meyer. *No. 4. West of Railway Line, rest of Division between Main Line, Umlaas River Boundary of No 3.*—Chairman: W L Stead, Thornville Junction. Members: F H Meyer, J R Schwegmann, W E Schwegmann, W S Crouch, B R Puchanan (Hon. Sec., Manderston). *No. 5. West of Main Line, Beaumont, East of Main Mid-Illovo River from Westley's Drift to Umgwaranta River.*—Chairman: J W Harvey, Camperdown. Members: L G Wingfield Stratford, R Lyne, O A Hutton, E H Hayes, F E Groom. *No. 6. Mid-Illovo West of Line, rest of Division South of Umlaas River.*—Chairman: B E Evans. Members: J W V Montgomery, J H McCullough, J Ballam, J James, H S Power.

DUNDEE.—Chairman: F Turton, Glencoe Junction. Members: J Campbell, J J Grove, H Wiltshire, G M De Waal, Aug Jansen, A J Potgieter, A Cronje, A Schuid, H Greenhough. SUB-DIVISIONAL BOARDS.—*Glencoe Sub-area.*—Members: F Turton, H Greenhough, W H Miller, F Schroeder, V Marshall, J Lausen, J J De Jager, Rev Father Rauch (Native interests). *Hatting Spruit Sub-area.*—Members: J J Grove, H A J Davil, A E Norman, J Campbell, Rev J Dewar (Native interests). *East of Helpmakaar Road.*—Members: A M Cronji, D C Pieters, P Meyer, J A Naude, A Jansen. *West of Helpmakaar Road.*—Members: A J G Meyer, A P Lund, D C Uys, A J Van Tonder, Jun, A J Potgieter. Members of Joint Committee for Area West of Helpmakaar: A J Potgieter, A P Lund. Members of Joint Committee for Area East of Helpmakaar: A Jansen, A M Cronji. Area between Main Vryheid Railway Lines.—Members, W Craig, H Wiltshire, C M Meyer, Sen, A Spies, Jun, C M De Waal.

DURBAN BOROUGH.—Chairman: E L Acutt, Durban. Members: H R Bousfield, R Benningfield, G Swales, J Haynes, — Arthur.

EMTONJANENI.—Chairman: Magistrate. Members: F W Smith, H J James, F W White, A W Symmonds, R J Ortlepp, D C Uys, L J Van Rooyen.

ESHOWE.—Chairman: A Boast, Magistrate. Members: A Moore, G H Hulett, C F Adams, T Parkins, A T Wantink, F J Dickens, H H Thole.

ESTCOURT.—*Ward 2. East of Main Line.*—Chairman: A Stuart. Members: Magistrate, J Ralfe, J W Haw, J G Hatting, A Peniston, A B Haviland, G M Rudolph. *Ward No. 3. (Boundaries):* The Bergville Magisterial Division, Tugela



to junction of the two Tugelas; The Winterton Settlement fence to Vaai Plaats fence and Ovington and Sibhamie's Location fence, and from there to Government Game Reserve).—Chairman: H J De Waal. Glenisla. Members: R Gray, M Sanderson. R J Land, A Spearman, H L Bacon. *Ward No. 4* (Estcourt West of Railway Line; follow Bushman's River as far as Mr. Kerr's farm, then Nalaara's Location fence as far as Game Reserve).—Chairman: R H Ralfe. Members: F C Schiever, J Rencken, W Couch, P Male, T L Fyvie. J Hatting, A W J Hatting. *Ward No. 5* (Boundaries: Remainder of District West of Line).—Chairman: H Blaker, Estcourt. Members: W Comins. E B Griffin, H A Woodruffe, Col. Crompton, J Russell, A C Robinson, Jun, A E Downing, A D Shaw, J W Bentley.

GREYTOWN.—Chairman: Paul Hansmeyer, Greytown. Members: D Havemann, A Newmarch, J A Nel, W T Slatter, A T Handley, H S Botha. *Central Board*.—Chairman: P Hansmeyer, Greytown. Members: J A Nel, A Newmarch, W J S Newmarch, T K Taylor, S W Cadle, R J Van Rooyen, E J Van Rooyen, J G Nel.

INANDA.—Chairman: C R Bishop, J.P., Umgeni. Members: R Harrison, W Sykes, Jun, E Dore, W Campbell, R Armstrong.

KLIP RIVER.—*No. 1* (A line from Elands Laagte along the Matawaans and Jononos Kop to the Berg; North line, Dundee boundary: all West of Main Line).—Members: C Mitchell Innes, R M Gray, L Meyer, J C Henderson, C Allen. *No. 2* (O.R.C. line and boundary No. 1). Members: D Bester, A J Marais, W Allison, J Bester, — Brink. *No. 3* (From Klip River Bridge to Sand Spruit, and up Sand Spruit to its source in the Berg).—Members: H A Potgieter, A A Wetherell, B Nel, F Van Rooyen, H Portsmouth. *No. 4* (Rest of Division South and East of Sand Spruit and West of Main Line).—Members: W Leathern, H Illing, J H Newton, E Robinson, G W Willis. *No. 6* (Whole of Division East of Main Line).—Chairman: J G de Waal. Members: R A Smith, H Nicholson, P Cronje, J Farquhar.

KRANTZKOP.—Chairman: L L D Prokseh, Krantzkop. Members: L M J Van Rooyen, L M J Van Rooyen, F E Van Rooyen, J H Van Rooyen, J P Zietsman, A Johnson.

IXOPO.—Chairman: Magistrate. Members: Thos Allen, Geo Martin, E Marriott, A Stone, G A Cooper, J.P., Wm Gray, D Campbell, F L Thring, J.P.

LION'S RIVER.—*No. 1* (Southern portion of West of Main Line).—Chairman: U K McKenzie, Lidgetton. Members: R J Spiers, F North, A McLean, J Morphew. *No. 2* (Northern portion West of Main Line).—Chairman: G Ross, Nottingham Road. Members: J Clouston, K Soutar, D Connel, D Smythe. *No. 3* (Southern portion East of Main Line).—J W Dicks, "Rosebank," Howick. Members: W M Henderson, — Buchanan, Jos Raw, H J McKenzie. *No. 4* (Northern portion East of Main Line).—Chairman: H Burgmann. Members: W Methley, G Hutchinson, J J Morton, B Taylor. (The whole of the members of the Sub-Divisional Boards constitute the Central Board with the Magistrate, Lion's River, as Chairman.)

IMPENDHLE.—Chairman: T Fleming, Boston. Members: J Martens, P J Lourens, T Carter, C W Brooke, J W McLean, H Boike, C C Lewis, W S Alborough, W Harrington, C W Roberts, D Tootell. *Sub-Committee appointed for Northern portion of Division* (added to Lion's River Division).—Chairman: P J Lourens, Insinga, via Nottingham Road. Members: H Boek, C N Brooke, T Carter, J Martens, J W McLean. *Sub-Committee for Southern portion of Impendhle*.—Chairman: T Fleming, Boston. Members: C C Lewis, W S Alborough, W Harrington, C W Roberts, D Tootell.

LOWER TUGELA.—Members: W H B Addison, A E Jackson, H E Essery, A S L Hulett, J Brown, W O Robbins.

LOWER UMZIMKULU.—Chairman: Col. J F Rethman, North Shepstone. Members: Col. J R Royston, D C Aitken, J.P., C H Mitchell, J.P., G P Beachcroft, Claude Manning, H Albers, N Harper, J S Clarke, A Borchard, T Stapleton, Col. Bru-de-Wold.

MOOI RIVER.—Chairman: W. G. Randles. Members: J. H. Wallace, H. F. Cadle, R. Garland, John Bartholomew, J. W. Johnstone, C. R. Skottowe, J. N. Boshoff, J. R. Lindsay.

MTUNZINI.—Chairman: Magistrate. Members: F Green, G M J Gielink, G Getkate, W Saville, A H Konigkramer.



**NEWCASTLE.**—No 1 (to be known as Charlestown-Ingogo District from main line of Railway where it strikes the Southern line of the farm Cloutant West, thence along Western boundary of said farm, thence along S. W. boundary of Tipperary West, thence Southern boundaries of Hamstead, Dumferline and Roodeport, thence along the Northern side of the Botha's Pass main road to where it joins the O.R.C. Boundary, thence along the boundary of the Colony, thence along the Charlestown Fence to where it joins the Railway line near Mount Prospect Gate, thence along the Railway line to Cloutant West).—Chairman: J Vos, Charlestown I.O. Members: W J Adendorff, A J Johnstone, A Paine, A H Trouw, Angus Wood. No. 2 (Newcastle district Southern boundary of No. 1 along Railway line from Cloutant West, including portion of Town Lands, Newcastle, which by agreement with Government is considered to be West of line, thence along Railway line where it strikes the Southern boundary of the farm Kopjeallen, thence along Southern boundaries of Kopjeallen, The Gardens, and Lincoln to the Ingagane River, thence up the Ingagane up to the farm Falixtowe, along Southern boundaries of Falixtown, B lwerton, Brooklyn, Stonehenge, Tathamscamp, Hanover, Ellensdale, Endsel, Bejuisel, Stelazies Kop, Mount Blanc, to O.R.C. border fence, thence along O.R.C. boundary joining Southern boundary of No. 1 at Botha's Pass).—Chairman: S W Reynolds. Members: F A R Johnstone, W Moller, J.P., L H S Jones, C Earl, F Meyer, J J Muller, — Van Breda, J Macdonald, J C Adendorff, E Sanders. No. 3. *Dannhauser District* (Bounded by Southern District No. 2 from the Railway line at Kopjeallen to the Berg, thence along O.R.C. border, the boundary between Newcastle and Klip River Divisions, thence along the Railway line to the farm Kopjeallen).—Chairman: W L Oldacre, Dannhauser. Members: Geo Friend, B Harrington, L J Muller, J Ecksteen, E Hodson, W Watson, Ted Twyman, G Langley, Don Urquhart. No. 4 (East of Railway Line, along the boundary between Newcastle and Dundee Divisions from the Railway Line near Dannhauser to the Buffalo River, along the Buffalo River to the junction of the Ingagane, thence along the Ingagane to its junction with the Ineander, thence along the Ineander to the fence of the Newcastle Town Lands, known as the Eastern boundary of the Railway Line, thence along the Eastern side of the Railway Line to the Magisterial Division boundary near Dannhauser).—Chairman: T K Boshoff, Dannhauser. Members: J H Potgieter, H Miller, J H van der Westerhuizen, J J Kemp, W Dieks, C Uys. No. 5 (the strip of land lying between the Railway Line and the Buffalo River from the Ingagane and Ineander streams, which form the North-Western boundary of No. 4 district).—Chairman: E W. Noyce, Boscobello P.O.; members, Geo Matthews, T K Panzera. *Central Board.*—Chairman: S W Reynolds, Newcastle. Members: F A R Johnstone, J Vos, Sen, Angus Wood, W Oldacre, W Watson, E W Noyce, F N Panzera, T R Boshoff, J H van der Westhuizen.

**NEW HANOVER.**—Central Board. Chairman: E Newmarch. Members: W W Bentley, T C Wolhuter, F Reiche, H Schmidt, E Lindhorst, W L'Estrange, A F McKenzie, W Meyer. *New Hanover Sub-Committee.*—Chairman: E Newmarch. Members: Jno Moe, W W Bentley, W Ortmann, T C Wolhuter, O J Muirhead. *Dalton Sub-Committee.*—Chairman: W L'Estrange. Members: A F McKenzie, R W Smith, G Reddinger, H Rosenbrock, J H Gordon, W Meyer. *Schroeders Sub-Committee.*—Chairman: F Reiche. Members: H Schmidt, E Lindhorst, G Moe, P Rodehorst, H T Rohrs, F Gorden, A Meyer, W Fortmann.

**NQUTU.**—Chairman: A Barklie, Utrecht. Members: H Wilkins, R L Flindt, W A Westbrook, J W F Hall, Dr. Knight.

**PAULPIETERSBURG.**—Chairman: N J Els, Viljoen's Rust. Members: J B Rudolph, G J Combrink, A Schutte, A Bester, P H van Rooyen.

**PIETERMARITZBURG.**—Chairman: B Swete Kelly, Pietermaritzburg. Members: W S Crart, C A Fawcett, W E Goodwin, E G McAlister, E E Hodgson.

**RICHMOND.**—Chairman: Magistrate. Members: E E Johnson, J Mapstone, G D Alexander, C P Lewis, C Nicholson, W Comrie, John Marwick, W P Payn, A H Cockburn. *Sub-Division No. 2.*—Chairman: G D Alexander, Nel's Rust. *Sub-Division No. 5.*—Chairman: W Oldfield, Fox Hill.

**REIT VLEI DISTRICT.**—Chairman: D. E. Muir, J.P., Elsmore, Mooi River. Members: P. Otto, J.P., R. J. Van Rooyen, E. J. Van Rooyen, J. G. Nel, A. Kehrs, J. Hooper, Otto Norton (Hon. Secretary).

**SEVEN OAKS DISTRICT.**—Chairman: W J S Newmarch, Harden Heights. Members: H M Balding, J.P., J Crow, J T Martens, H Mayne, S W Cadle.

UMGJENI DIVISION.—Chairman: E. S. Goodwill. Members: F. Schroeenn, B. Crompton, C. Arnold, R. J. Potts, A. J. Tyler, F. J. Smith, A. Wood, J. P. Symonds, J. J. Potterill, W. H. Keytel, C. Lund.

UMLAZI.—Chairman: C Henwood, Durban. Members: W Pearcer, W Gillett, H Freese, L Jackson, P W Mackenzie.

UMSINGA.—*No. 1 District* (All farms lying West of the Umsinga-Helpmakaar main road).—Chairman: E C Nuss. Members: W W Strydon, J.P., J H Nuss. *No. 2 District*—(All farmers East of the Umsinga-Helpmakaar main road—excepting the farms Sutherland, Gordon, Memorial Mission and Pomeroy Town Lands, and Location lying North of the Mazabeko and West of the Buffalo River.—Chairman: W H Wholberg, P.O. Elandsdraal. Members: H W Dedekind, J Dedekind. *No. 3 District*—(The remaining portion of the area lying in the Umsinga Division).—Chairman: A Muller. Members: M J Matheson, H Muller. The three Committees to constitute the joint Committee.

VRYHEID.—Chairman: A von Levetzow, Vryheid. Members: P Labuschagne, B E A Rabe, G M van der Westhuizen, J Kruger, J F Potgieter, L M N Nel.

WEENEN.—Chairman: C G Jackson, Weenen. Members: C Harding, J.P., P J van Rooyen, J.P., K Rottcher, S B Buys, J J Vermaak, L C Kinsman, J W A Pole, C F Vermaak, P R Buys, J C's son.

---

## ***Executives of Farmers' Associations.***

---

ALEXANDRA AGRICULTURAL AND HORTICULTURAL ASSOCIATION.—President: Wm Thompson. Hon Vice-Presidents: A Blamey, E W Hawksworth, Thos Kirkman, H Basley, J L Knight, R.M. Hon Secretary and Treasurer: Geo Lamb. Hon. Auditor: W B Brunner. Committee: W Arnott, H G Arbuthnot, R C Archibald, R G Archibald, J Bazley, A Behrmann, W Cooke, G J Crookes, R Cruickshank, H D Hawksworth, H E Hawksworth, A F W Hawksworth, R C Hawksworth, J Landers, D McAndrew, F Nelson, C A Preston, Dr. Rouillard, W A Gilbert, Fred Blamey, Rev B M Ford, S C Hawksworth, J C Landers, S F Crookes, J J Crookes, R A Lindsav, J A Curle, F B Preston, R Parkin, H Reynolds, J B Stewart, C Taylor, H H P Waller, J Ross, Rev W C Wileox, Dr W P Tritton.

ALFRED COUNTY FARMERS' ASSOCIATION.—President: A G Prentice, J.P. Vice-Presidents: C Knox, J.P., L T Trenor, and C A Holwell. Hon. Secretary and Treasurer: H C Hitchins. Committee: C M Etheridge, R Fann, J.P., V Hitchins, S Aitchison, J.P., W B Rethman, Dr Case, J.P., H Rethman, R G Mack, J Hogg.

BOSTON FARMERS' ASSOCIATION.—President: Thos. Fleming, J.P. Vice-President: T. W. Rudland. Hon. Secretary: W. J. Fly, J.P. Hon. Treasurer: H. A. Phipson.

CAMPERDOWN AGRICULTURAL SOCIETY.—President: John Moon, J.P. Vice-Presidents: J Gavin and John W Harvey, J.P. Hon Secretary: W E Allsopp.

CAMPERDOWN AND DISTRICT FARMERS' ASSOCIATION.—President: John Moon, J.P. Vice-President: F N Meyer. Hon Secretary: J Baker. Committee: H Baker, J Gavin, J W Harvey, J.P., W B Turner, H H Hutton, C Baker, H E Meyer.

CHARLESTOWN FARMERS' ASSOCIATION.—President: Johannes Vos. Vice-President: — Adenderff. Secretary: W. J. Curnow. Treasurer: J. O. Thomas. Committee: H. O. Eksteen, J. P. Vos, J. C. Uys, W. G. Thomas, D.

Doyer, F. A. R. Johnstone, M.L.A., G. E. Lane, S. R. Higgins, B. F. Johnstone, A. J. Johnstone, J. J. Eksteen, R. H. Greaves, Peter Thompson, G. McArthur, and V. B. van Rooyen.

DRONK VLEI FARMERS' ASSOCIATION.—President: Capt Perceval. Vice-President: Alban Hodson. Hon Secretary and Treasurer: Edward Marriott.

DUNDEE AGRICULTURAL SOCIETY.—President: T. P. Smith. Vice-Presidents: The Minister of Agriculture, the Mayor of Dundee, Messrs. A. L. Jansen, F. Thurton, and W. Craig. Hon. Secretary and Treasurer: J. McKenzie. Committee: A. W. Smallie, W. J. H. Muller, G. M. de Waal, B. J. Humann, R. Retallack, H. Ryley, H. J. Head, C. T. Vermaak, H. P. Walker, J. Dyson, H. Wiltshire, J. Campbell, H. Greenhough, D. W. H. Tandy.

DURBAN AND COAST SOCIETY OF AGRICULTURE AND INDUSTRY.—President: E. W. Evans. Vice-Presidents: Sir B. W. Greenacre, A. M. Campbell, Hon. Marshall Campbell, M.L.C., W. Adams, Frank Stevens, C.M.G., M. S. Evans, M.L.A., P. D. Simmons, W. R. Poynton, Hon. C. G. Smith, M.L.C., G. S. Armstrong, M.L.A., H. R. Bousfield, W. G. Brown, C. Henwood, J. Livingston, John Nicol, C.M.G., H. H. Puntan, R. H. Wisely, V. Seymour, H. Sparks. Secretary: John Morley. Committee: J. Ellis Brown, J. Burman, C. A. L. Bull, D. Doyle, Samuel Deane, James Henderson, W. Konigkramer, W. D. Kimber, W. J. Mirrlees, W. Milne, J. Swales, W. J. Thompson, C. Wilson, Wilfred Payne, Wallis Short, S. T. Amos, J. McBride, F. M. Hillier, W. A. Stocken, and W. A. Bath. Treasurer: Edwin Greenacre. Auditor: W. Murray Smith.

DURBAN COUNTY FARMERS' ASSOCIATION.—Patron: J H Colenbrander. President: J McIntosh. Vice-Presidents: H Westermeyer, R R McDonald. Committee: F R W Behmer, G Compton, H Freese, W Freese, W Gillitt, H W Konigkramer, H W Nichols, F Schaefermann. Hon Secretary and Treasurer: Frank J Volek.

EMPANGENI AND DISTRICT SUGAR PLANTERS' AND FARMERS' ASSOCIATION.—President: Col. C. B. Addison. Vice-President: P. Stott. Secretary and Treasurer: F. Piccione, P.O. Empangeni. Executive: P. Addison, G. Higgs, — Salvesson, — Blake.

ESHOWE DISTRICT FARMERS' ASSOCIATION.—President: J R Pennefather. Vice-President: C F Adams. Secretary: T Parkins. Treasurer: W T Brockwell.

GOURTON FARMERS' ASSOCIATION.—President: W C Stockil, Esq., J.P. Vice-President: M Sandison, Esq. Hon Secretary and Treasurer: Frederick B Burnard, Esq.

HATTING SPRUIT FARMERS' ASSOCIATION.—President: A W Smallie. Vice-President: Thos Brookes. Hon Secretary and Treasurer: R J Hearn. Committee: G Queddon, N Glutz, Wm Craig, W R Qusted, W T Heslop, Thos Dewar, A E Norman, D P Campbell, J J Grove, H J Hearn, D W H Tandy, J B Pendar, J Campbell, J Barbour.

HIMEVILLE AGRICULTURAL SOCIETY.—President: Henry C Gold, Dartford, Underberg. Vice-Presidents: F E Peto, G H Royston, J B Nicholson. Hon Secretary and Treasurer: G Palframan, Watermead, Underberg. Executive Committee: G Malcolm, W S Johnston, P McKenzie, F E Peto, J S Gordon. Yard Steward: D T Malcolm. Auditors: T C Dearlove and F E Peto.

HOWICK FARMERS' ASSOCIATION. — Chairman: Thos Morton. Vice-Chairman: M A Sutton. Hon Secretary and Treasurer: A Clark.

INGOGO FARMERS' ASSOCIATION.—President: E. W. Noyce. Vice-Presidents: G. A. Fimstone and D. A. Drummoad. Hon Secretary and Treasurer: C. Drummond.

IXOPO AGRICULTURAL SOCIETY.—President: F L Thring, J.P. Vice-Presidents: Col W Arnott, B.M.R., W K Anderson, J.P., C E Hancock, J.P. Committee: John Anderson, Thos Allen, J C Auld, H D Archibald, F S Beningfield, S Boyd, T L Clarence, F E Foxon, R.M., Wm Foster, Jas T Foster, C C Foster, Geo E Francis, L Gray, A M Greer, J.P., J R Greer, Wm Gold, H A Hill, C F Harris, A E Keith, R Kennedy, Geo Martin, W Oakes, L J Phipps, T F Remfry, J W Robinson, Jas Schofield, M.L.A., D C Smail, A Stone, W R Way, A H Walker, M.L.A., P D Webb. Hon Secretary: G C Way, Hon Assistant Secretary: A G Harris. Hon Treasurer: T Arnott,



**IXOPO FARMERS' ASSOCIATION.**—President: C. E. Hancock, J.P. Vice-Presidents: T. F. Remfry and R. Vause. Hon. Secretary and Treasurer: Geo. E. Francis, Morningview, Ixopo. Delegates to Farmers' Union: Col. Arnott and T. F. Remfry, with W. D. Campbell as reserve. Committee: John Anderson, W. Oakes, D. Campbell, G. C. Way, James Foster, A. Keith, G. Martin, F. Z. Thring, A. C. Kirkman.

**KLIP RIVER AGRICULTURAL SOCIETY.**—President: Daniel Bester, Vice-Presidents: Herman Illing, J G Bester, Wm A Illing. Secretary and Treasurer: Edward V Bambrick (Box 90, Ladysmith). Executive Committee: A Brink, J Farquhar, C.M.G., M.L.A., W C Hattingh, J G Hyde, Trev Hyde, A I Horsley, W Freer, L A Leonard, H Nicholson, H C Thornhill, Herman Illing, D Munger, P de Waal, J H Newton, D Sparks, J.F., J T Francis, A W (Gus) Illing, G Pinkney, W Cochrane, George L Coventry, and *ex officio* officers.

**KRANTZKOP FARMERS' ASSOCIATION.**—President: Capt M Landsberg. Vice-President: P R Vermaak. Hon Secretary and Treasurer: Dr L L Proksch. Committee: C J van Rooyen (Albany), C J van Rooyen (Wonderfontein), Philip Nel, J A G Mare, L M G van Rooyen, J C Martens.

**LION'S RIVER DIVISION AGRICULTURAL SOCIETY.**—President: Graham Hutchinson. Vice-President: H Nisbet. Executive Committee: H Nisbet, M A Sutton, A J Holmes, J Humphries, Jno Pele, and W A Lawton. Auditor: W J R Harvard. Hon Secretary and Treasurer: Arthur F Dicks, P.O. Box 1, Howick.

**LITTLE TUGELA FARMERS' ASSOCIATION.**—President: F van de Waal. Vice-President: F G King. Secretary and Treasurer: H L Frances. Auditor: A D Buchanan. Committee: P R Summersgill, F W Holmes, J P Wepenaar, J J Harding, Max Cameron.

**LOTENI FARMERS' ASSOCIATION.**—President: J A Tod. Vice-President: T Carter. Hon Secretary: A Kennedy Stone.

**LOWER TUGELA DIVISION ASSOCIATION.**—President: W R Hindson. Vice-President: A E Foss. Hon Secretary and Treasurer: H Curtis Smith (Stanger). Committee: A S L Hulett, F Addison, G Stewart, T G Colenbrander.

**LOWER UMZIMKULU AGRICULTURAL ASSOCIATION.**—President: D C Aiken, J.P. Vice-Presidents: H Aibers and C H Mitchell, J.P. Hon Secretary and Treasurer: W J Plows. Committee: C Manning, J W Aiken, W G Camp, T F Godwin, J Hutton, H Norden and A Borchard. Hon Secretary, Show Committee: J W Aiken. Show Committee: A E Collison, A Borchard, F Knoop, A Ringo, H F Voigts, J Hutton, C Manning, A J Lugg and H Albers. Hon Auditor: J W Aiken.

**MID-ILLOVO FARMERS' CLUB.**—Chairman: L G Wingfield-Stratford, J.P. Vice-Chairman: B B Evans. Hon Secretary: J W V Montgomery. Assistant Hon. Secretary: A L Wingfield. Hon Treasurer: Jos McCullough.

**MOOI RIVER FARMERS' ASSOCIATION.**—President: R Garland. Vice-President: C B Lloyd. Hon Treasurer: H A Rohde. Collector: Capt W H Stevenson. Auditor: Claude Scett. Hon Secretary: H B Hail.

**MUDEN AGRICULTURAL ASSOCIATION.**—President: Thos Thresh. Vice-Presidents: Wm Lilje, E A Grantham. Secretary and Treasurer, C A Selling. Committee: Otto Rottcher, Karl Lilje, Karl Rotter, Herman Schafer, Fritz Torlage, T Braithwaite, Ernest Rottcher, C H Tilbrook, Rev H Rottcher (Hon Life Member).

**NEWCASTLE.**—President: F A R Johnstone, J.P. Vice-President: C Earl, J.P., Mayor of Newcastle; Angus Wood, J.P., Ingogo; O Schwikkard, C.M.G., Newcastle. Secretary: Wm Beardall. Treasurer: Ed Nicols. Executive Committee: L H S Jones, E Phillips, H C Caldecott, C Watson, G Langley, W A Lang, W J P Adendorff, J E de Wet, O Davis, S W Reynolds, B Pettigrew, G W Thomas, G H Bishop, H R Muir, M C Adendorff, W Napier, P Van Breda, Chriss Botha, G Templar.

**NEW HANOVER AGRICULTURAL ASSOCIATION.**—President: G C Mackenzie. Vice-Presidents: J C Watt, J.P., and R H Oellermann. Life Member: C A S Yonge, M.L.A. Secretary and Treasurer: W D Stewart, New Hanover. Auditor: J H F Hohls. Committee: W N Angus, E Bentley, W W Bentley, Edward Boast, E E Comins, G R Comins, C Crookes, jun, H Dinkelmann, J Duval,



W Fortmann, Dr C H Herbert, J Hillermann, J H F Hohls, H Jacobson, H A Light, G C Mackenzie, A F Mackenzie, T M Mackenzie, J Muirhead, J.P., Oswald Muirhead, G Moe, J.P., J Moe, O Moe, C Oellermann, F Oellermann, C J Oellermann, W Ortmann, J C Otto, E Peckham, J.P., J A Potterill, S Peckham, C M Scott, Rev J Scott, Wm Schroeder, J.P., Owen Solomon, J H Smith, Riby Smith, F Thole, H Vorwerk, H F Westbrook, W H Westbrook, C Westbrook, T Wolhuter.

NOODSBERG ROAD AGRICULTURAL ASSOCIATION.—President: Fritz Reiche, J.P. Vice-Presidents: H Mummbräuer, P Rodchorst, W Dralle, W Wortmann. Committee: W Bartels, F Bosse, H Brammer, A J Bruyns, H Bruyns, Carl Dralle, H Gebers, W Gevers, J H Holley, jun, W C Holley, C Hillermann, L Koch, H Kohler, F E Kuhn, M Maister, H Mereis, A Meyer, H Meyer-Estorf, H W Meyer, K A Meyer, H Misselhorn, W Misselhorn, K Peters, I Pfotenbauer, G Rabe, G Reiche, Joh Reiche, W Rencken, H Rosenbrock, H Schmidt, K Schmidt, Rev Jas Scott, K Seele, F J Smith, J Thies, W Witthoft, P Worthmann, A Worthmann, F Worthmann, H Worthmann. Secretary: Paul Vietzen, P.O., Singletree. Hon Treasurer: E Beurlen.

NOTTINGHAM ROAD FARMERS' ASSOCIATION.—President: B. Greene Vice-President: Geo Ross. Secretary and Treasurer: C J King, Nottingham Road. Hon Auditor: H Singleton.

PIETERMARITZBURGSCH BOEREN VEREENIGING.—President: D P Boshoff. Secretary: E G Jansen, 313, Loop Street, Maritzburg.

POLELA AGRICULTURAL AND HORTICULTURAL SOCIETY.—President: J Isbister. Vice-Presidents: W H Allwright, J F Alexander, and H Brown. Hon. Secretary and Treasurer: J Anderson Speak. Auditor: A Brown. Executive Committee: J Isbister, W H Allwright, J F Alexander, H Brown, H J Gazzard, G W Foster, J Anderson Speak. Hall Committee: W H Allwright, F Crossley, A Brown, with the trustees—J F Alexander, H E Mingey, and Geo Forder.

RICHMOND AGRICULTURAL SOCIETY.—President: John Marwick. Vice-Presidents: W P Payn, A W Cooper, J W McKenzie and Chas Nicholson. Hon Treasurer: R Nicholson. Hon Secretary: Tom M'Crystal. Committee: J W T Marwick, Evan Harries, R A McKenzie, F O Howes, H M Moyes, W Comrie, Thos Marwick, J C Nicholson, J W Flett, and E J B Hosking.

RICHMOND ROAD FARMERS' ASSOCIATION.—President: Thos Stead, J.P. Vice-President: W Mapstone. Secretary and Treasurer: W L Stead, New Leeds P.O. Committee: D Malcolm, J Mapstone, W P Payne, J James, J Sinclair, W S Crouch, H B Boyd, W Middleton, W Oldfield, T E Horwood.

ROYAL AGRICULTURAL SOCIETY OF NATAL.—President: Sir G M Sutton, K.C.M.G. Vice-Presidents: W S Crart, Jas King, D C Dick, G J Macfarlane, C.M.G., O Hosking, with His Worship the Mayor, *ex officio*. Secretaries, Treasurers and Collectors: Duff, Eadie & Co, 12, Timber Street, Pietermaritzburg. Yard Superintendent: H J Stirton. General Committee: T J Allison, W H Buchanan, F G Burchell, W H Cobley, P H Campbell, R Comins, W P Gough, E S Goodwill, K H Hathorn, K.C., T W J Hall, J Hall, L Line, Col Sir D Mackenzie, K.C.M.G., Jas Morton, Sir T K Murray, Jno Moon, W J O'Brien, P Otto, R H Pepworth, J F Potterill, A Robinson, Rev J Scott, P D Simmons, H Solomon, W L Stead, H J Stirton, Dr Oddin Taylor, F W Jameson, S J Mason. Executive Committee: President, Vice-Presidents, and W J O'Brien, W H Cobley, K H Hathorn, K.C., and Col E M Greene. Members appointed by Corporation: Councillors Ireland, Sanders and Hathorn.

SLANG RIVER (UTRECHT) FARMERS' ASSOCIATION.—Chairman: P J Kemp. Executive Committee: J J Uys, J Z Moolman, T J Botha, P J Viljoen, P J Kemp. Hon Secretary and Treasurer, Thys Uys, Utrecht P.O.

UMSINGA-BIGGARSBERG FARMERS' ASSOCIATION.—President: E C Nuss. Vice-President and Acting Secretary: Geo S Saunders, Helpmakaar.

UMVOTI AGRICULTURAL SOCIETY.—President: Major T Menne. Vice-Presidents: Theunis J Nel, M.L.A., W J Slatter, W L'Estrange. Executive Committee: Tol Nel, A Newmarch, W Lilje, O Rottcher, S C Van Rooyen, W Newmarch, E J Van Rooyen, O Norton, I M Nel, J Browning. Managers of Show Yard: J M Handley and N Hunter. Hon Auditor: W K Ente. Secretary and Treasurer: W H Gibbs.

UMVOTI FARMERS' ASSOCIATION.—President: P R Botha (J's son).

Vice-President: J M Handley. Secretary and Treasurer: G E Cadle (Box 6, Greytown). Auditor: J M Nel. Committee: W J Slatter, J G Nel, H F Torlage, R J Landsberg, A Newmarch, P H van Rooyen, A F Handley.

UPPER BIGGARSBERG FARMERS' ASSOCIATION.—President: W L Oldacre. Vice-President: G Langley. Hon Secretary: W F B Sutherland.

UTRECHT AGRICULTURAL SOCIETY.—Chairman: L Viljoen. Vice-Chairman: B H Breytenbach. Members: I Bierman, M M Knight, J H Klopper, B C Hattingh, T Botha, M Gregory, P L Uys, H P Breytenbach. Secretary: G J Shawe.

UTRECHT BOEREN VEREENIGING.—President: D J A van der Spuy. Secretary: G J Shawe, Utrecht.

VICTORIA COUNTY AGRICULTURAL SOCIETY.—President: Lieut-Col F Addison. Vice-Presidents: Sir Liege Hulett, Kt, M.L.A., W J Thompson, Esq, J.P., J Polkinghorne, Esq, M.L.A. Committee: Messrs W H B Addison, G S Armstrong, M.L.A., C Bishop, J.P., D Brown, sen, J.P., W Campbell, T C Colenbrander, A E Foss, J.P., A S L Hulett, J.P., J B Hulett, C Jackson, G Nicholson, J.P., T Polkinghorne, J W Perkins, J.P., E Saunders, J.P., G Stewart, and J H Stansell. Hon Secretary and Treasurer: H Curtis Smith (Stanger).

VRYHEID (WARD I.) AGRICULTURAL SOCIETY.—President: E Dalton. Vice-President: J F Potgieter. Secretary: F Kolbe. Assistant Secretary: H Lombaard. Committee: Secretary, Assistant Secretary, and A von Levetzow, T Ries, P Grobler, F Molman, A Steenkamp.

WEENEN AGRICULTURAL SOCIETY.—President: Allan Stuart. Vice-Presidents: R Garland, R H Ralfe, F I de Waal. Hon Treasurer: F C Schiever. Hon Secretary: E Catherley. Auditor: S Wolff. Executive Committee: Hon H D Winter, M.L.A., J W Moor, M.L.A., D W Mackay, T H Hindle and L L'Estrange. Manager of Show Yard: S Vaughan. Assistant: A Clouston.

WEENEN COUNTY HORTICULTURAL SOCIETY: Committee of Management: The President and Treasurer of the Weenen Agricultural Society and C J Offord, G W Linfoot, T J Nunn, Dr Brewitt, S Vaughan. Hon Secretary: F Catherley.

ZULULAND FARMERS' ASSOCIATION.—President: F W White. Vice-President: C E Symonds. Secretary: R H McAlister. Committee: Hon D C Uijs, A W Symonds, H T James, R J Ortlepp, J N R Dixon.

ZULULAND COAST FARMERS' ASSOCIATION.—President: G H Hulett. Vice-President: C Hill. Hon Secretary and Treasurer: F Brammage, Ginginhlovu.

*(The Editor will be obliged if the Hon. Secretaries will supply him with lists of the Executives of their Associations.)*

## **Land and Agricultural Loan Fund.**

The Land and Agricultural Loan Fund has now been established, and the Board are prepared to receive applications for advances on security of first mortgage on fixed property. Applications must be made upon special printed forms, which can be obtained, together with full particulars as to the conditions under which advances are made, from the office of the fund, Post Office Buildings, Pietermaritzburg.

All correspondence should be addressed to the Secretary, Land and Agricultural Loan Fund, P.O. Box 357, Pietermaritzburg.

## Experiment Station Notices.

### TREES FOR SALE.

To encourage tree-planting, transplants and seeds of forest trees are supplied by Government, so far as in stock, at the undermentioned rates, exclusive of carriage, from the Government Nursery, Central Experimental Farm, Cedara.

Transplants of Eucalyptus, Pines, Acacias, Casaurinas, Cupressus, etc., about 25 trees in each tin, at 8s. 4d. per 100 trees. Trees in separate tins at 1s. each.

Transplants of scarce kinds, larger trees, or surplus stock, when available, will be charged at special rates, which will be furnished on application.

Tree seeds, in variety, at 6d. per packet. Price per pound, which fluctuates, will be furnished on application.

Package and postage of seed, when required, charged 1s. per lb. extra.

Orders for present or spring delivery should be addressed to the **Chief Afforestation Officer, Cedara**, and must be accompanied by a remittance in cash or postal order. Cheques cannot be accepted.

### PURCHASE OF TREE SEEDS.

With a view to the encouragement of seed production in the Colony, offers are invited from persons having locally-grown seed of exotic trees for. Not less than one pound will be purchased; and a specimen bearing seed vessels or flowers should be sent for identification purposes. Offers should be made in the first instance to the Chief Afforestation Officer, Cedara.

### SILVER POPLAR.

Root suckers of the Silver Poplar (*Populus alba*) can be supplied in any quantity, at 8s. 4d. per hundred, on application to the Chief Afforestation Officer, Cedara.

### CENTRAL EXPERIMENT FARM, CEDARA.

IN order to minimise interference with the general course of work on the Central Experiment Farm, Cedara, it has been found necessary to set apart one day of the week, namely, Friday, as a visitors' day.

Arrangements will accordingly be made on that day for receiving visitors and showing them round the Farm. A trap will be at Cedara Station to meet the up 9.50 a.m. train; and if intending visitors from up-country will give notice to the guard at Howick Station, on their way down, a trap will be sent to meet the train which passes through Cedara at 11.2 a.m. Visitors travelling by other trains will also be met if they will previously make arrangements by writing.

On other than the visitors' day, visitors may be received by appointment, but special attention cannot be guaranteed in regard to their being shown round.

As the catering involves such a strain upon the resources of the School of Agriculture, it has been decided to limit the number of delegates from any one Association to 25 per cent. of its membership. At least 14 days' clear notice must be given by Associations, so that there may be time to make all necessary arrangements.

In view of the fact that Parliament has refused to grant the necessary funds, the cost of railway tickets can no longer be borne by the Department of Agriculture.

All communications in connection with proposed visits to the Experiment Farm should be addressed to the Director of Experiment Stations, Cedara.

24th September, 1907.

W. A. DEANE, Minister of Agriculture.



### FEES FOR AGRICULTURAL ANALYSIS.

It is hereby notified that Farmers and others can secure analytical determinations from the Government Laboratory, Central Experiment Farm, Cedara, in accordance with the following scale of fees, which is subject to revision:—

|                                                                               | Scale I. | Scale II. |
|-------------------------------------------------------------------------------|----------|-----------|
| FERTILIZERS AND FEEDING STUFFS:                                               | £ s. d.  | £ s. d.   |
| Determination of 1 constituent . . . . .                                      | 0 7 6    | 0 5 0     |
| Determination of 2 or 3 constituents . . . . .                                | 0 15 0   | 0 10 0    |
| Complete analysis . . . . .                                                   | 1 1 0    | 0 15 0    |
| SOILS: Partial analysis of a soil in relation to its fertility . . . . .      | 1 1 0    | 0 10 6    |
| Complete analysis of a soil . . . . .                                         | 2 2 0    | 1 1 0     |
| WATER: Irrigation and drainage . . . . .                                      | 1 10 0   | 0 10 6    |
| VEGETABLE PRODUCE: Fodders, Ensilage, Grain, etc. . . . .                     | 1 1 0    | 0 15 0    |
| MILK, CREAM, BUTTER: Fat only . . . . .                                       | 0 5 0    | 0 2 6     |
| „ „ : Complete . . . . .                                                      | 0 15 0   | 0 7 6     |
| WATTLE BARKS AND TEA: Tannin . . . . .                                        | 0 5 0    | 0 2 6     |
| CATTLE DIPS: Quantitative analysis of 1 to 3 principal constituents . . . . . | 0 10 0   | 0 5 0     |
| INSECTICIDES:                                                                 |          |           |
| Qualitative analysis each constituent . . . . .                               | 0 5 0    | 0 2 6     |
| Quantitative „ „ „ . . . . .                                                  | 0 10 3   | 0 5 0     |

Scale No. 1 is applicable to samples handed in by Merchants and Dealers, and where trade interests are involved.

Scale No. 2 is applicable to samples forwarded by *bona fide* Farmers and Gardeners.

Samples will be accepted at the discretion of the Department, and must be properly selected and labelled.

The Department reserves the right to publish the results of any analysis performed by it; and, where such is deemed of sufficient public interest, it will remain at the discretion of the Department to remit any charges hereunder.

E. R. SAWER,

Director, Experiment Stations,

Acting Conservator of Forests.

November 22nd, 1907.

### TENDERS FOR MONO-RAIL SYSTEM.

Tenders are invited for the purchase of 6,400 feet of mono-rails, with points, etc., and four sugar cane trucks, from the Central Experiment Farm.

Tenders should be addressed to the Director of Experiment Stations, Cedara, and should be submitted with the least possible delay.

### MAIZE SEED.

Growers who may have for sale selected seed of the following types of maize are invited to communicate as early as possible with the Director of Experiment Stations, Cedara:—Horse Tooth, Hickory King, Boone County, Golden King and Yellow Dent.



## ***Publications Issued by the Department of Agriculture.***

THE following publications, issued by the Department of Agriculture, are still in print, and copies may be obtained free (except those with price attached) upon application to the office of the *Agricultural Journal*, Department of Agriculture, Pietermaritzburg. The figures in square brackets (e.g. [1904]) are the years in which the various publications were issued.

No.

## BULLETINS.

- 2.—“Manures on the Natal Market, 1902,” by Alex. Pardy, F.C.S., Analyst. [1902.]
- 2a.—“Treatment of Milk and Cream, from the Producer to the Consumer,” by E. O. Challis, Dairy Expert. [1904.]
- 4.—“Manures on the Natal Market, 1903,” by Alex. Pardy, F.C.S., Analyst. [1903.]
- 6.—“Manures on the Natal Market, 1904,” by Alex. Pardy, F.C.S., Analyst. [1904.]
- 7.—“Tree-planting in Natal,” by T. R. Sim, F.L.S., Conservator of Forests. [1905.]  
(Price 2s. 6d., post frce.)
- 8.—“Agricultural Co-operation,” by E. T. Mullens, Secretary, Minister of Agriculture. [1905.]
- 10.—“Manures on the Natal Market, 1905,” by Alex. Pardy, F.C.S., Analyst. [1905.]
- 11.—“East Coast Fever,” by S. B. Woollatt, Principal Veterinary Surgeon. [1906.]
- 12.—“Manures on the Natal Market, 1906,” by Alex. Pardy, F.C.S., Analyst. [1906.]
- 13.—“Report on the Disease known as ‘Bluetongue’ in Sheep,” by H. Watkins-Pitchford, F.R.C.V.S., F.R.S.E., Govt. Bacteriologist and Director, Govt. Laboratory. [1908.]
- 14.—“Poultry-Keeping in a Simplified Edition for Farmers,” by F.C. [1908.]

## REPORTS.

- Annual Report of the Agricultural Department, 1902. (Includes Reports of the Director of Agriculture, Entomologist, Conservator of Forests, Dairy Expert, Editor *Agricultural Journal*, etc.) [1903.]
- Report of the Secretary, Minister of Agriculture: January 1, 1903, to June 30, 1904. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1905. [1905.]
- Report of the Secretary, Minister of Agriculture, for the year ended 30th June, 1906. [1906.]
- (For a continuation of the statistics given in these reports see reprint “Natal’s Progress in 1906,” noted below.)
- Fourth Report of the Government Entomologist: 1903-4. [1905.]
- Fifth Report of the Government Entomologist: 1904-5. [1906.]
- Sixth Report of the Government Entomologist: 1905-6. [1907.]
- (The Third Report of the Entomologist is included in the “Report of the Agricultural Department, 1902,” noted above.)
- Report of the Conservator of Forests, 1902. [1903.]
- Interim Report of the Conservator of Forests up to December 31, 1905.
- Report of the Principal Veterinary Surgeon, for year ended 30th June, 1906. [1907.]
- First Annual Report of the Land Board, 1905. [1906.]
- Annual Report of the Land Board, 1906-7,

## MISCELLANEOUS REPRINTS, ETC.

- Black Spot ("Letter Book Pages": reprinted from *Journal*.)
- Mealie Grubs ( do do )
- Mosquitoes ( do do )
- Woolly Aphis ( do do )
- Cotton. By A. N. Pearson, Director, A. E. & C. (Reprinted from *Journal*: 1904.)
- Co-operation. By E. T. Mullens, Secretary, Minister of Agriculture. (Reprinted from *Journal*: 1907.)
- Citrus Fruit Export. (Reprinted from *Journal*: 1907.)
- Natal's Progress in 1906. (Reprinted from *Journal*: 1907.) The statistics contained in this paper are on the same lines as those in the Annual Reports for previous years of the Secretary, Minister of Agriculture.
- Natal's Progress in 1907. By H. J. Choles, F.S.S. (Reprinted from *Journal*: 1908.)
- Fibre Cultivation. (Reprinted from *Journal*: 1907.) This paper is a summary of Bulletin No. 13 of the Department of the Interior, Bureau of Agriculture, Manila.
- Sisal, Mauritius Hemp and other "Aloe" Fibres. By T. R. Sim, F.L.S., Conservator of Forests. (Reprinted from *Journal*: 1907.)
- The Fibre Industry of Mauritius. By Leonard Acutt, J.P., Tongaat; Member of the Land Board, Natal. (Reprinted from *Journal*: 1907.)
- South African Products Exhibition, 1907. Report of T. R. Sim on the Natal Exhibits. (Reprinted from *Journal*: 1907.)
- Poplar Timber for the Local Manufacture of Matches. By E. R. Sawyer, Director, E.S. (Reprinted from *Journal*: 1908.)
- Agricultural Industries and Land Settlement in Natal. [1907.]
- Judging Fruit, Flowers, Plants and Vegetables at Shows. By T. R. Sim, F.L.S., Conservator of Forests. [1906.]
- Agricultural Statistics, Natal, 1905-6. [1907.]
- Model Rules for Agricultural Co-operative Societies. (*Price 1s., post free.*)

---

## SOUTH AFRICAN STUD BOOK.

---

A record of all classes of Stock; the object being to encourage the breeding of thoroughbred stock and to maintain the purity of breeds, thus enhancing their value to the individual owner, and to the country generally.

Application for Membership and Entries of Stock should be addressed:—

- |                          |    |                                                      |
|--------------------------|----|------------------------------------------------------|
| FOR CAPE COLONY ..       | .. | A. A. PERSSE, P.O. Box 703, Cape Town.               |
| „ TRANSVAAL ..           | .. | F. T. NICHOLSON, P.O. Box 134, Pretoria.             |
| „ ORANGE RIVER COLONY .. | .. | E. J. MACMILLAN, Government Buildings, Bloemfontein. |

---

## THE SOUTH AFRICAN STUD BOOK

---

IS OBTAINABLE OF:—

T. MASKEW MILLER,  
ADDERLEY STREET, CAPETOWN.

PRICE 10s. 6d.

A. A. PERSSE,  
SECRETARY, SOUTH AFRICAN STUD BOOK ASSOCIATION,

## “HOLMES” LIQUID SHEEP DIP (Non-Poisonous).

Possesses all the essential ingredients of a successful Liquid Dip. The preparation of this is such that there is not a Liquid Dip sold to beat it for destroying Scab, Ticks, Vermin, etc; for keeping Sheep healthy; for cleansing Drains, Outhouses, Kraals, Stables, etc.

## “HOLMES” CATTLE (PASTE) DIP.

Constitutes a record in answering all the requirements of farmers.

NOTE THIS CAREFULLY:

It is one of the surest tick-destroying Dips now in the market. It is free from irritating substances, and while the proportion of mixing is **1 lb. of paste to 12 gallons of water** its price is only **5d. per lb.**, which means (in comparison to other Cattle Dips sold) a **saving from 25 to 50 per cent. in the cost of dipping.**

It remains for all Farmers dipping cattle to insist upon having and using this famous dip.

## “HOLMES” SANITARY LIQUID SOAP.

A preparation that dispenses with all soaps. An ideal cleanser. For washing Floors, Rooms, etc. Use **1 cupful of Liquid to a bucket of water.** Nothing more cleansing or economical.

**Secure these through your Merchant or Stores.**

— PROPRIETOR —

## CHAS. W. HOLMES,

202, Longmarket Street, Pietermaritzburg.

OR P.O. BOX 51,

# MOLASSINE

# MEAL

***For  
Stock  
of all  
kinds.***

**Unsurpassed by any other  
Food Condiment.**

EVERY PROGRESSIVE FARMER KNOWS  
ITS VALUE AND USES IT.



**TRY IT**

on any animal in low condition and  
CONVINCE YOURSELVES.

Packed in 100 lb. Bags and stocked by all Produce  
Dealers.

*RAILAGE AT S.A.P. RATES.*

For Pamphlets, etc., apply to—

**The MOLASSINE CO. (South Africa),**

**LIMITED,**

**BOX 400, DURBAN.**

***Factory: MOUNTEDGECOMBE.***



**THE FOOD**

for HORSES MULES, COWS, SHEEP,  
PIGS, DOGS, and POULTRY.



## **South Devon Cattle.**

Celebrated for the Dairy and the Butcher—are hardy and stand a sea voyage well. At the Bath and West Show at Newport in 1907 they beat all others in the Butter test classes; they are the heaviest cattle in the World, and produce beef of the highest quality. Pedigree Auction Sales at Totnes first weeks of October and April each year. All particulars of—

**ALFRED MICHELMORE,** *Secretary Herd  
Book Society,*  
**Gate House, Totnes, ENGLAND.**

## **The Keeling Agency. Ltd.**

OFFICES: **National Mutual Buildings,**

P.O. BOX 220.

**JOHANNESBURG.**

**PRODUCE, COMMISSION & EXPORT AGENTS.**

*Predecessors: SPENCE & DRURY, LTD. Established 1880.*

*Successors to (Agency Dept.) ABINGER KEELING & CO.*

*Bankers—The Standard Bank of South Africa Ltd., Johannesburg.*

**Security. Attention. Experience.**

## **VETERINARY PAPERS FOR FARMERS,**

—PUBLISHED BY—

**The “Times” P. & P. Co., Ltd.,**

**222, Church Street, and Chancery Lane, Maritzburg.**

**BUTTER MAKING. ABORTION IN COWS.**

**LIVER ROT AND BRAXY.**

**WOUNDS AND CASTRATION.**

**LAMENESS AND HEREDITARY**

**PREDISPOSITION IN HORSES.**

**CURE OF HORSES' LEGS AND FEET.**

**ANTHRAX. TUBERCULOSIS.**

**PARASITIC BRONCHITIS IN SHEEP,**

*By Professor Wortley Axe.*

**Price 1s., Post, 1s. 1d.**

# BENTLEY & VANDERPUMP'S

## CONDITION

## POWDER.



## PREVENTS

## HORSE

## SICKNESS.

### READ THE FOLLOWING TESTIMONIALS :—

DEAR SIR,

I have used your Condition Powder and have found it to surpass anything I had tried. My horses felt the benefit of the Powder before many days, and I find that the use of the Powder for a few days from time to time, keeps them in perfect condition and free from disease of every description.

Yours faithfully, EUGENE RENARD.

TO LENNON LIMITED, Durban.

DEAR SIR,

For many years past I have purchased Bentley and Vanderpump's Condition Powders as a Medicine for the Horses and Mules in use at my Brick Fields, and I must say that I cannot estimate the value of the Powders sufficiently, as my stables are always free from sickness, and I have never had any serious outbreak among my stock, which I put down entirely to the regular use of your Powders.

They seem to be the only preventive of Horse Sickness that I know of.

You are at liberty to make what use you like of this letter.

Yours faithfully, J. J. JOHNS

MESSRS. LENNON LIMITED, West Street, Durban.

DEAR SIR,

I have used Bentley & Vanderpump's Horse Condition Powders continuously during the last four years, and am fully convinced that they act as a preventive, and I have to thank them for the fact that my horse did not take sickness last season when horses died all round me.

I am never without B. & V. Powders in the stable.

Yours faithfully, H. A. JACOB.

WENTWORTH, NATAL.

September 30th, 1903.

**THIS** Powder should be given to all Horses occasionally ; it keeps them in good condition by giving tone to the Stomach and purifying the blood. For Grease, Swelled Legs, Coughs and Influenza, it is the Best Remedy.

The dose is a teaspoonful given every night for a week, in a mash or feed of corn, and the horse can be worked as usual all the time, being in fact more fit

IN TINS AT 2/6, 9/- AND 15/- EACH.

May be obtained from Chemists and Store Keepers throughout S. Africa.

SOLE PROPRIETORS—

## LENNON LIMITED

Cape Town.  
Port Elizabeth.  
Johannesburg.  
East London.  
Durban.

Bulawayo.  
Bloemfontein.  
Graaff Reinet.  
Aliwal North.  
Kimberley.

Beaufort West.  
Oudtshoorn.  
Mafeking.  
Fordsburg.  
Germiston.

Wynberg.  
Paari.  
Stellenbosch  
and  
London, England.

BEWARE OF IMITATIONS.

# **The Three Best Soaps**

---

## **in the Market.**

---

**Anderson's Pearl Soap.**

**Anderson's Three Crowns Soap.**

**Anderson's A 1 Blue Mottled Soap.**

---

### **Why they are the Best.**

---

Because they contain NO injurious chemicals, and therefore do NOT spoil the clothes.

### **Why you should use them.**

---

1st. Because they are best value for your money.

2nd. Because they are made in the Country, and by supporting the country you live in you are supporting yourself.

---

**MANUFACTURERS:**

**The Natal Soap Works, Ltd.,**

P.O. BOX 44.

**Durban.**



---

# The Corn Exchange. (ESTABLISHED 1868.)

---

**R. MASON & SON,**  
**289, CHURCH STREET, PIETERMARITZBURG,**  
**MILLERS,**  
 Grain, Produce, and Seeds Merchants.

---

**SPECIAL.**—Boer Meal, Crushed Wheat and Rolled Wheat (Kühne System).

**PIGEON FOODS.**—Maple Peas, Hemp, &c., &c. Poultry and Chicken Mixtures. Thorley's Ovum.

**HORSE-FOOD.**—Rolled Oats, Wheaten Bran, Crushed Mealies, Molassine Meal, Rock Salt, Chaffed Forage and Lucerne, &c., &c., also Cow Meal.

**FARMERS' AGENCY.**—Consignments of Produce of all kinds realised to best advantages. Account Sales prompt with remittances.

---

## SEEDS ! SEEDS !!

We hold Prime Fresh Stocks of :—

**Mangel Wurzel, Swedes, Turnips, Sugar Beet,**  
**Paspalum, Italian and Perennial Ryegrass,**  
**Provence Lucerne, Rape (Dwarf Essex), Thousand**  
**Headed Kale, Cow Peas, Black Wattle,**  
*etc., etc.*

---

For description, mode of cultivation and prices, see our New Catalogue (free on application).

---

**R. MASON & SON,**

THE CORN EXCHANGE SEEDS DEPARTMENT,

**289, Church Street, Maritzburg.**



P.O. Box  
21

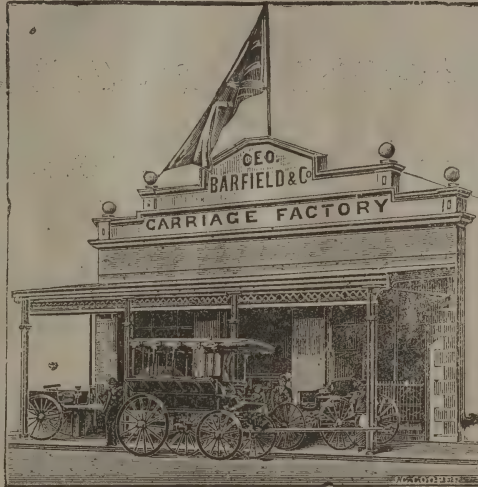
**GEORGE BARFIELD & CO.,**

TELEPHONE  
391

**212, Longmarket Street, Maritzburg.**

**Builders of High-  
Class Vehicles.  
Both for Town  
and  
Country Use.**

**New and Second-  
hand Vehicles al-  
ways on Hand.**



**Estimates given  
for all kinds of  
Carriage Work.**

**Direct Importers.**

**The Trade sup-  
plied at most rea-  
sonable Prices.**

# **The Wattle Extract Co.**

**16 & 17, ANGLO-AFRICAN HOUSE,  
SMITH STREET, DURBAN.**

—BUYERS OF—

## **WATTLE BARK**

**IN ANY QUANTITY. PROMPT SETTLEMENTS ON RECEIPT OF GOODS.**

**HIGHEST PRICES GIVEN. NO COMMISSION CHARGED.**

**- - CORRESPONDENCE INVITED - -**

**P.O. Box 734.**

**Telegrams: "ATLANTIC."**

# A . . . FRUIT GROWER'S HANDBOOK

BY

CLAUDE FULLER.

PREPARED FOR THE USE OF FRUIT GROWERS, WITH NUMEROUS  
SELECTED ILLUSTRATIONS.

**Price 7s. 6d., including Postage.**

THE TIMES PRINTING & PUBLISHING CO., LTD..

P.O. BOX 204.

*The Times Printing & Publishing Co., Ltd.,*

*P.O. Box 204, Pietermaritzburg.*

Please send me.....cop.....of the book entitled "A Fruit Grower's Handbook," by Mr. Claude Fuller, for which I enclose £      s.      d.

[Sign here] \_\_\_\_\_

Address \_\_\_\_\_

## *Calvert's Carbolated Creosote*

Is the most reliable DISINFECTANT for all purposes. Mixes readily in cold water, and can be used as a wash for Cattle, Horses and Dogs. No farmer should be without it. Price is low and quality guaranteed. In 1 gall. Tins, 5 or 10 gall. Drums, and 50 gall. Casks. Prices on application to:—

Agent for **J. M. Wilson, 398, West Street, Durban.**  
F. C. Calvert & Co.'s Preparations. P.O. BOX 282.

Postal  
Address :

P.O. 176,  
Maritz-  
burg.

### **FARMERS, STUDY YOUR INTERESTS**

By Buying Sound and Reliable Goods.

- - THIS CAN BE DONE - -

By placing your orders with

Tele-  
graphic  
Address

Saddlery,  
Maritz-  
burg

**LYLE BROTHERS,** Saddlers Harness,  
and Bag Makers  
**246, Church Street, Maritzburg.**

Whose endeavour has always been to give the best value at lowest possible prices consistent with quality  
Harness and Saddlery of every description made to order. Large Stocks on Hand.

**REPAIRS EXECUTED WITH NEATNESS AND DESPATCH.**

Branches—LADYSMITH, DUNDEE, AND VRYHEID

## **HAYNE & CO.,**

**GENERAL BUYERS OF NATAL PRODUCE.**

**Mealies, Kafir Corn, Wattle Bark,**

ETC., ETC., ETC

— ADDRESS —

**72 & 74, COMMERCIAL ROAD, DURBAN.**

— ALSO AT —

**8, HARRISON STREET, JOHANNESBURG.**

By Appointment to



His Majesty the King.

# BOVRIL

is ALL beef—prime beef in a readily digestible form.

That is why BOVRIL is so invigorating a beverage, so strengthening a food, why cooks find it so useful, why Doctors and Nurses recommend it, why the sensible housewife will have nothing in place of it.



**England is the Home  
of Good Tailoring—**

**London the Fashion  
Centre of the World.**

## AN IMPORTANT SAVING

Can be effected if you order your clothes from London.

**JOHN J. M. BULT,**

Cash Tailor,

**140, Fenchurch St., London, Eng.,**

has a Special Department in his business for attending to the requirements of those abroad, where the same personal attention is given which has built up his reputation at home. He guarantees the best quality cloth—the best styles also.

PRICES are as follows:

|                         |          |      |
|-------------------------|----------|------|
| Frock Coat and Vest     | - - from | 63/- |
| Dress Suit (Silk-lined) | - - "    | 84/- |
| Lounge Suit             | - - "    | 55/- |
| Norfolk and Knickers    | - - "    | 63/- |

A choice of Tweeds, Flannels, Cheviots and Serges may be had. Kindly state which required—and the colour—when writing for patterns. Self-measurement forms on application. As a register is kept of all Customers' measures, an accurate fit is guaranteed.

## RIDING BREECHES

cut on the most approved lines from 35/-





# **TO FARMERS.**

## **Cheap Advertising.**

### ***The "Times of Natal."***

SPECIAL NEW SCALE

— FOR —

SMALL PREPAID ADVERTISEMENTS

— IN —

## **PEOPLE'S COLUMNS.**

*A POPULAR AND EFFECTIVE METHOD OF ADVERTISING.*

The "Times of Natal," with a view of still further popularising the paper as a medium for the insertion of "Small" Advertisements, have arranged a REVISED SCALE OF CHARGES for this class of advertisements.

Special Headings are given to '**LIVE STOCK,**' '**PRODUCE,**' etc., and thus Farmers' announcements enjoy a particular prominence,

***This Scale only applies to advertisements accompanied by remittance. Advertisements of this class, which are not prepaid, will be charged at a higher rate,***

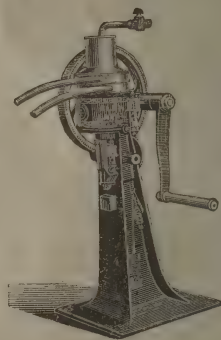
## **SCALE OF CHARGES.**

| NUMBER OF WORDS.          | NUMBER OF INSERTIONS. |        |         |                   |
|---------------------------|-----------------------|--------|---------|-------------------|
|                           | One.                  | Three. | Six.    | Over Six.         |
| 20                        | 1s.                   | 2s.    | 3s.     | 6d. per insertion |
| 30                        | 1s. 6d.               | 3s.    | 4s. 6d. | 9d. "             |
| 40                        | 2s.                   | 4s.    | 6s.     | 1s. "             |
| 50                        | 2s. 6d.               | 5s.    | 7s. 6d. | 1s. 3d. "         |
| Every additional 10 Words | 6d.                   | 1s.    | 1s. 6d. | 3d. "             |



## DISC HARROWS,

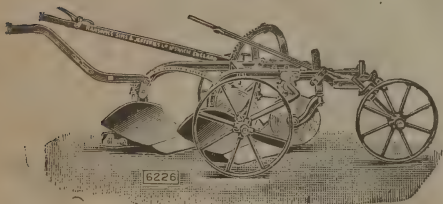
With Steel Weight Trays and Trucks.



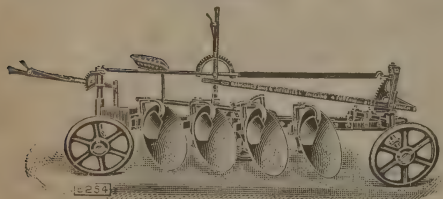
**NEW MODEL Alfa Laval**  
**Cream Separator,**  
 Never beaten in competition.



**PLANET.**



**INVINCIBLE.**



**DISC.**

**RANSOME'S**  
**PLANET,**  
**INVINCIBLE,**  
**AND DISC**  
**PLOWS.**  
**ALL PRIZE TAKERS.**

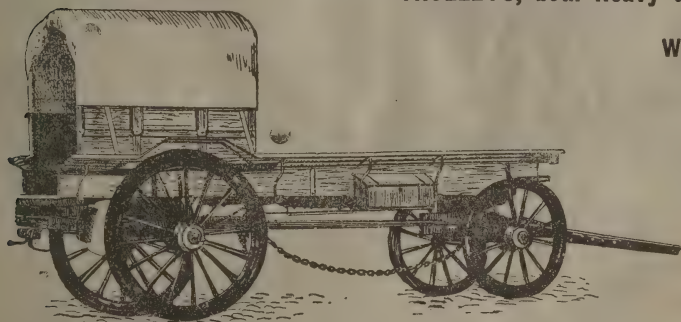
**STEEL MURRAY & Co.,**  
**PIETERMARITZBURG.**

# J. MERRYWEATHER & SONS, Wagonmakers, Blacksmiths, &c.,

Supply Wagons of every description on Shortest Notice and at Low Prices; Workmanship and Material Guaranteed. Tip Carts, Light Delivery Carts; also Light Spring Carts suitable for Farmers and Dairymen.

**TROLLEYS, both Heavy and Light.**

**WHEELBARROWS.**



All Sizes of Wheels  
in Stock or Made  
to Order.]

Saezewood, Stinkwood, Stinkwood Shafts Sawn or Bent to Shape, Forgings, either for Ploughs Wagons, or Mowing Machines.

**352, CHURCH STREET, PIETERMARITZBURG.**

BY SPECIAL  
APPOINTMENT TO



HIS EXCELLENCY  
SIR HENRY MCCALLUM,  
K.C.M.G.

# M'CRYSTAL & HARKNESS,

**Saddlers and Harness Makers,**

**186, CHURCH STREET, PIETERMARITZBURG.**

WE ARE SPECIALISTS FOR

# AGRICULTURAL SEEDS

We stock the following and many other varieties:—

**Kale**

**Serradella**

**Fescue**

**Lucerne**

**Cocksfoot**

**Paspalum**

**C. Starke & Co., Ltd., Mowbray,**

— WRITE FOR PRICE LISTS. —



**FLEET.**

|                  | Tons. |
|------------------|-------|
| S.S. Umhlali ... | 5,000 |
| " Umzumbi...     | 5,000 |
| " Umvolosi...    | 4,500 |
| " Umsinga ...    | 4,500 |
| " Umtata ...     | 3,500 |
| " Umgeni ...     | 3,500 |
| " Umvoti ...     | 3,500 |
| " Umtali ...     | 3,500 |

**FLEET.**

|                 | Tons. |
|-----------------|-------|
| S.S. Umfuli ... | 3,300 |
| " Umhloti ..    | 3,100 |
| " Umkuzi ...    | 2,800 |
| " Umbilo ...    | 2,500 |
| " Umlazi ...    | 2,200 |
| " Umzinto ...   | 2,200 |
| " Congella ..   | 2,200 |
| " Pongola ....  | 1,800 |

## FORTNIGHTLY FAST DIRECT SERVICE BETWEEN LONDON AND NATAL.

### To Importers of LIVE STOCK, POULTRY & DOGS:—

This Line of Steamers affords excellent advantages for the importation of Live Stock of all kinds, and has an unrivalled record for the carriage of the best Pedigree Live Stock and Poultry of the Colony.

:o:—

The Steamers of the London Service have Saloon accommodation amidships on the Main Deck, and are fitted with Refrigerators, Electric Light, and Bells. Surgeon and Stewardess carried.

:o:—

Particulars of Sailing Dates, Freight, and Passage may be had on application to:—

**KING, & SONS, WEST STREET, DURBAN**

**If You are INTERESTED in the INDUS-  
TRIES OF THE COLONY, You are the  
man we WANT TO TALK TO.**

— FOR —

## Spiders, Buggies, Carts, etc.,

We are holding our own against all comers.

We have won 7 Medals in six weeks at 3 Shows.

At the Royal Show, 1908, in the best turnout, the 1st and 3rd prizes were awarded to carriages which were built at our factory.

:o:—

Get our prices and photos and copy of testimonials. All wheels made at our factory. Note address—

## H. W. Reeve & Co.,

UMVOTI STEAM CARRIAGE  
AND WAGON WORKS . . .

## GREYTOWN.



# FERTILIZERS.

WE ARE NOW BOOKING ORDERS FOR—

**SUPERPHOSPHATE,** ALL GRADES,  
**BASIC SLAG,**  
**BONE MEAL,**  
**POTATO MANURE,** SPECIAL.  
**POTATO MANURE,** FARMERS,  
**MIXED MANURES** OF ALL KINDS,  
**NITRATE OF SODA,**  
**MURIATE OF POTASH,**  
**AND ALL OTHER MANURES.**

ALL OF THE BEST QUALITY AND WITH A GUARANTEED ANALYSIS.  
 WRITE FOR PRICE LIST.

— SOLE AGENTS FOR —

J. & F. HOWARD'S celebrated B.Z., T.C.C.C., N.A., and other high class Ploughs, Harrows, &c.

BRADLEY'S Gang, Disc and "Royal Blue" Ploughs, Disc Harrows  
 MEALIE PLANTERS, &c.

MASSEY-HARRIS Binders, Reapers, Mowers and Rakes.

HARDWARE. FURNITURE. CROCKERY.

**P. Henwood, Son, Soutter &**

**DURBAN and MARITZBURG**

# Summer Planting

SEASON 1908-9.

**MAGNIFICENT STOCK**

OF

**Orange, Lemon, and other  
Citrus Fruit Trees,**

In all the leading varieties, guaranteed true to name, and sold in accordance with Government Ordinance for preventing introduction of Insect Pests and Plant Diseases.



TRADE

MARK

Trees delivered free to any Railway Station in South Africa at from **2s.** to **4s.** per tree, according to size of tree and quantity ordered.

For full particulars see new Catalogue, sent post free on application to

**H. E. V. Pickstone & Bro.,**

*Groot Drakenstein, C. C.*

# THE Petrolite Lamp.



**PORTABLE. INCANDESCENT.**

**NO LIQUID. NO WICK.**

IF OVERTURNED GOES OUT. ACCIDENTS IMPOSSIBLE.  
NO WORKING PARTS. COSTS LESS THAN PARAFFIN.  
SIX HOURS OF BRIGHT, STEADY 50-CANDLE-POWER  
LIGHT FOR ONE PENNY.

**Awarded the Keith Prize for Safety & Economy**

**INSURANCE NOT AFFECTED BY ITS USE.**

— SOLE AGENT —

**John Mayhew, 2, Castle Arcade, Durban.**

## **HUNT, LEUCHARS & HEPBURN, LTD.,**

**TIMBER MERCHANTS, . . . DURBAN.**

**Large Stocks of TIMBER, GALVANISED IRON and a  
BUILDING REQUISITES.**

**Estimates given for Wood and Iron Buildings of Every Description and All  
Classes of Joinery Work.**

**GRAIN BAGS AND FENCING MATERIAL A SPECIALITY.**

**P.O. Box 455.**

**Telegraphic**

**And at JOHANNESBURG**

---

— THE —  
**“Times of Natal.”**

*(Established 1851.)*

***Three Editions Daily.***

---

**The Best Paper for Farmers.**

---

**Two Columns Daily on Agricultural Topics**

---

***Full Cable Services.***

***Latest Transvaal & Natal Trade & Market Reports.***

***Interesting Special Features.***

***Local and District News.***

---

**SUBSCRIPTIONS :**

---

NATAL AND ZULULAND:—Daily, £1 6s. per annum; including Weekly Edition, £1 10s.; Weekly Edition only, 12s

OTHER PARTS OF SOUTH AFRICA.—Daily, £2 per annum; including Weekly Edition, £2 12s.; Weekly Edition only, 18s.

UNITED KINGDOM AND BRITISH COLONIES.—Daily, £2 10s. per annum; including Weekly Edition, £3s. 2s.; Weekly Edition only, £1.

---

**Printing, Publishing and Advertising Offices :**

**Printers, and Chancery Lane, Maritzburg.**



---

# STEWARTS AND LLOYDS (SOUTH AFRICA) LTD.,

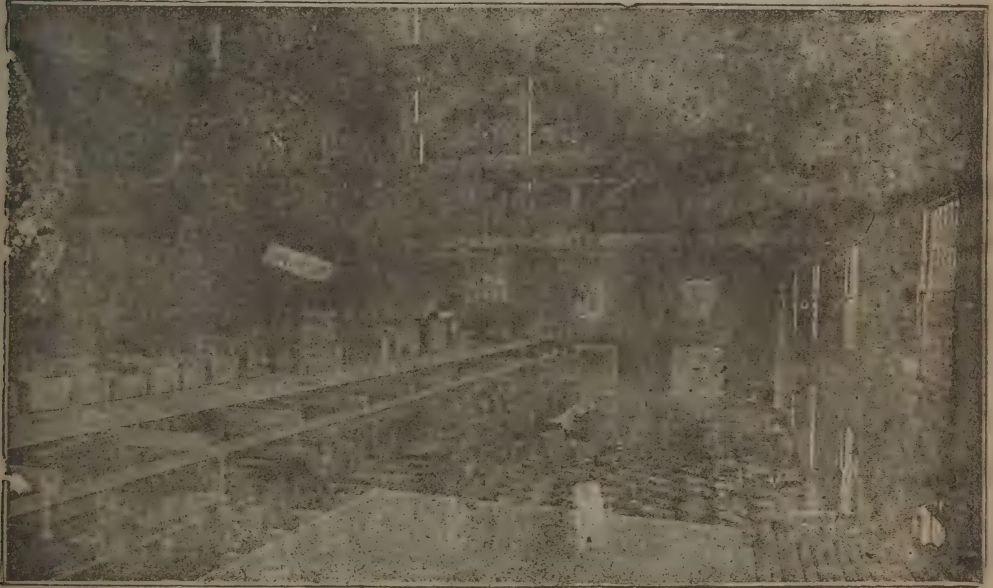
---

MANUFACTURERS OF WROUGHT IRON

## ***TUBES AND FITTINGS***

FOR GAS, STEAM, AIR, AND WATER.

**BOILER TUBES. WELL TUBES.**



### DURBAN STORE.

Large Stocks held in Durban and Maritzburg of all Sizes  
from  $\frac{1}{4}$  in to 12 in. English and American Thread.

BOILER TUBES from 2 in. to 4 in.

All Classes of Valves and Cocks Stocked.

---

**Durban Office: 310a, SMITH STREET**

P.O. BOX 131.

Stores: **SMITH STREET.** Telephone No.  
**MILNE STREET.** Tele. Add.:  
Pie

**Maritzburg Stores and Offices: G**

HIGHLY  
REMUNERATIVE  
INDUSTRY.

SAND

IS

GOLD

ONLY SMALL  
INVESTMENT  
NECESSARY.

## The Best and Cheapest Building Materials

Are BRICKS, ROOFING TILES, FLOORING TILES, WALL COVERING PLATES, SEWER PIPES made of sand, gravel, slag, chippings, mixed with cement or lime according to the simple and renowned process "system Dr. Gaspary," by means of

### Machines and Moulds (Dr. Gaspary's),

AT VARIOUS PRICES.

APPLY FOR PAMPHLET No. 150 (Gratis).

Information given free of charge in all modern languages (spoken and written). Foremen-instructors at disposal of buyers of machines to set factories going. Largest Special Machine Works for the Utilisation of Sand.

Leipziger Cementindustrie, Dr. Gaspary & Co.,  
**Markranstädt** (near Leipzig), **GERMANY.**

## Agricultural Pests

... WITH ...

## ... METHODS OF PREVENTION

... BY ...

### MISS E. A. ORMEROD,

Late Consulting Entomologist to the Royal  
Agricultural Society (of England).

## Agricultural Pests WITH Methods of Prevention.

By Miss A. E. ORMEROD,

Consulting Entomologist to the Royal Agricultural Society of England:

1s. By Post, 1s. 1d.

& P. Co., Ltd., Maritzburg.

# **FENCING MATERIAL**

Large Stocks of Barbed and Plain Wire  
Standards and Straining Posts.

## **GATES,**

Cyclone Droppers (or Pickets) and Loops  
in Stock or Made to Order.

Also Cyclone Patent Lever Gate.

## **CYCLONE GATE & FENCE CO., LTD.**

315, CHURCH STREET (Opposite Market Square).

Telegrams—"CYCLONE." BOX 289.

P.O. BOX 879. Telegraphic Address: MILLING, DURBAN.

## **The Natal Mill Elevator Co.**

Bankers: The Natal Bank, Ltd.

Mills: UMBILO.

Offices: 319, SMITH STREET, DURBAN.

—WE ARE—

**BUYERS OF MEALIES AND**

—IN ANY QUANTITY

\* FOR CASH



# G. MONHAUPT & Co.,

CABLE ADDRESS—

"MONHAUPT."

P.O. BOX 26.

TELEPHONE 308.

*The Esplanade* (Corner of  
Mona Rd.),

*Durban, Port Natal.*

— Exporters of —

Wool, Mohair, Hides, Skins, Bark, Maize and other Produce.

Woolpacks, Grain Bags and Bark Bags always on hand.

— Agents for —

BUREAU VERITAS GERMANISHER LLOYD

CLASSIFICATION OF SHIPS.

ASSOCIATIONS OF HAMBURG AND BREMEN UNDERWRITERS.

— SETTLEMENT OF CLAIMS. —

## REID & ACUTT'S WOOL MART, Ltd.

*Mona Road and Esplanade, Durban.*

**WOOL SALES.**

Sales of Wools, Mohair, Hides, Skins, Horns, Wattle Bark, &c.,

**HELD EVERY WEDNESDAY, AT 12 NOON,**

— And Special Sales when necessary. —

**Liberal Advances made on Produce. Prompt Settlements.**

*Reid & Acutt's Wool Mart, Ltd.*

DIRECTOR - - SIDNEY A. GREEN.

WM. P. ANDERSON,  
Secretary.



# THEO. SCHLOSS,

*3 & 4, Anglo-African House,*  
P.O. BOX 270. *Smith Street, Durban.* Telegrams—  
'Brokerage'

BUYS . . **Wattle Bark** **AND** **Mealies** . . IN ANY QUANTITY

— FOR —  
Prompt Cash and Pays Highest  
Current Market Rates.

It will pay you to communicate with above before selling elsewhere.

## PERIODICALS . .

RELATING TO  
**Farming and Agriculture.**

**1909.**

Avoid disappointment in receiving your Newspapers and Magazines promptly, by  
placing your order **AT ONCE.**

**Accuracy and Regularity guaranteed.**  
**Lists sent free on application.**

—THE—

**"Times" Printing and Publishing**

222, Church Street, and Chancery Lane

# CLARKE BROS. AND BROWN, LTD.

Specialists in Butchers', Bakers', & Dairymen's Requisites.

Sole Agents for **Ear-Rivets** for Marking Sheep, Cattle,  
and all kinds of Live Stock.

LARGE STOCKS OF ALL KINDS OF DAIRY MACHINERY  
AND APPLIANCES.

Plans and Estimates for  
complete Factory Plants  
for Milk Pasteurizing,  
Butter Making and  
Cheese Making, for-  
warded on receipt of full  
particulars.

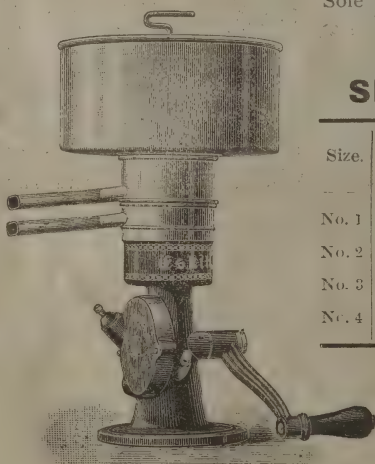
WRITE FOR OUR ILLU-  
STRATED CATALOGUE.

Sole Agents for the  
**"Eskil" Cream  
Separator,**

Made in one size only ;  
Guaranteed capacity

10 Gallons per Hour,

Price £4 15s. Nett.



Sole Agents in South Africa.  
for the

## "VEGA" SEPARATOR.

| Size. | Guaranteed<br>Capacity per<br>Hour. | Price.   |
|-------|-------------------------------------|----------|
| No. 1 | 17 Gallons.                         | £8 10s.  |
| No. 2 | 28 Gallons.                         | £10 10s. |
| No. 3 | 45 Gallons.                         | £14 10s. |
| No. 4 | 72 Gallons.                         | £19 10s. |

Sold under full  
Guarantee.

AWARDS 1908.—*First Prizes have been won at Rose-  
bank, Port Elizabeth, and Johannesburg, for  
Best Collection of Dairy Appliances and  
Machinery,*

For Prices and all particulars, please apply to—

**CLARKE BROS. & BROWN, LTD.,**  
**Dairy Supply Department,**  
**287, Pine Street, DURBAN.**

OWN, EAST LONDON, AND PORT ELIZABETH

# J. A. PETERS,

## Forage & Corn Merchant,

### Army Contractor,

## 184, Commercial Road,

### **MARITZBURG,**

Has for Sale at Lowest Rates:—

|             |                                                                                                                                     |              |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------|
|             | <p><b>French Early Rose Seed Potatoes</b><br/>(just arrived).</p>                                                                   |              |
| RACE-       | <b>Algerian Seed Oats</b> (reputed rust-resisting).                                                                                 | SPECIALITIES |
| HORSE       | <b>Lucerne Seed.</b>                                                                                                                | IN           |
| FOOD        | <b>Compressed Fodder</b> (American and Australian), <b>Lucerne</b> , <b>Australian</b> and <b>American Bran</b> , <b>Oil Cake</b> . | HORSE BEANS  |
| A           | <b>Best Whole and Rolled Feed Oats.</b>                                                                                             | AND          |
| SPECIALITY. | <b>Pigeon Peas</b> , <b>Fowls' Food</b> , <b>Oyster Shell</b> .                                                                     | PIGEONS'     |
|             | <b>Coolie Rice</b> , <b>Dholl</b> .                                                                                                 | PEAS.        |
|             | <b>Training and Ordinary Feed Forage</b> always on hand, and all kinds of <b>Produce</b> .                                          |              |

**COLONIAL PRODUCE BOUGHT AND DELIVERY TAKEN  
AT ANY RAILWAY STATION**

**Postal Address : P.O. BOX 197**



## **Stud, Stock, and Farm.**

**RATES OF CHARGES.**—20 words for 3 months, 3s. 30 words for 3 months 4s. 6d. 40 words for 3 months, 6s. Intending advertisers are requested to communicate with the Publishers direct.

### **STUD and STOCK.**

**P**OTTO, J.P., SOMERVILLE, RIET VLEI, Breeder of Pure-Bred FRIESLANDS, RAMBOUILLET RAMS, sire of which weighs 304 lbs.

**W**ILLIAM WOOD, "WOODFIELD" STUD FARM, NOTTINGHAM ROAD.—Breeder of Pedigree and Grade South Devon Cattle (heavy milking strain). Milk register kept. Young Bulls for sale. Also Shropshire Down Sheep (prizes won last season included a championship open to all breeds).

**P**D. KIMBER, MARITZDAAL, THE DARGLE.—Breeder of Yorkshire Coach Horses, Cleveland Bays, Hackneys, and Pure Breed Shetlands. Stallions, Mares, Young Stock, Saddle Horses, Remounts and well-matched Pairs always on sale. Young Horses selected privately trained to saddle or harness to suit purchasers. Also Breeder of Shorthorn Cattle.

### **POULTRY.**

**B**UFF ORPINGTONS, Silver and Golden Wyandottes, Black Minorcas. Won over 200 prizes in two seasons. Eggs for sitting, 15s. per sitting of fifteen (carriage paid). Cockerels from 10s. Correspondence invited.—MRS. R. F. DOTT, Kenilworth, Kimberley, C.C.

### **WANTED.**

**B**ONES AND FAT; any quantity. Best prices given.—Apply, WEBSTER, Bisley.

### **FOR SALE.**

**T**REES.—Young Forest and Ornamental Trees, Eucalypts, Pines, Grevilleas, Blackwoods, Beefwoods, Pepper Trees, Silver Trees, Kei-apples, Privets, etc., 8s. 4d. per hundred, or in separate tins, 6d. and 1s. each.—T. R. SIM, 168, Burger Street (Nursery, 271, West Street), Maritzburg.



## Index to Advertisements.

|                                      | PAGE.     |
|--------------------------------------|-----------|
| Barfield, George, & Co.              | 7         |
| Bifurcated & Tabular Rivet Co., Ltd. | iv.       |
| Bovril                               | 10        |
| Bult, John J. M.                     | 10        |
| Clarke, Bros. & Brown, Ltd.          | 24        |
| Cooper, Wm., & Nephews               | viii.     |
| Cotts, Wm. & Co.                     | vi.       |
| Cyclone Gate & Fence Co., Ltd.       | 21        |
| Dott, R. F.                          | 26        |
| Dr. Gasparry & Co.                   | 20        |
| Gradwell, M. W.                      | iv.       |
| Gradwell, W. B. & Sons               | iv.       |
| Hayne & Co.                          | 9         |
| Henwood, P., Son, Soutter & Co.      | 15        |
| Holmes, Chas. W.                     | 1         |
| Hunt, Leuchars & Hepburn, Ltd.       | 17        |
| Keeling Agency, Ltd., The            | 3         |
| Kimber, P. D.                        | 26        |
| Lennon, Ltd.                         |           |
| Lyle Brothers                        |           |
| Malcomess & Co., Ltd.                | (Cover—ba |
| Mason & Son                          |           |
| Mayhew, John                         |           |
| McCrystal & Harkness                 |           |
| Merryweather, J., & Sons             |           |



# INDEX TO ADVERTISEMENTS.

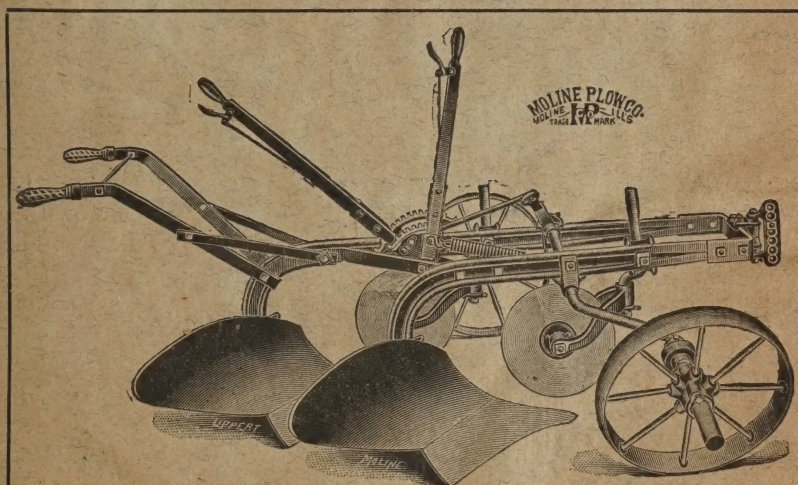
|                                    | PAGE.                 |
|------------------------------------|-----------------------|
| Michelmores, Alfred                | 3                     |
| Molassine Co., Ltd., The           | 2                     |
| Monhaupt G. & Co.                  | 22                    |
| Natal Direct Line                  | 14                    |
| Natal Mill Elevator Co., The       | 21                    |
| Natal Soap Works, Ltd.             | 5                     |
| North, G., & Son                   | ii.                   |
| Otto, P.                           | 26                    |
| Peters, J. A.                      | 25                    |
| Pickstone, H. E. V., & Bro.        | 16                    |
| Raw, J., & Co.                     | iii.                  |
| Reeve, H. W., & Co.                | 14                    |
| Reid & Acutt's                     | 22                    |
| Schloss, Theo                      | 23                    |
| Sim, T. R.                         | 26                    |
| Simmons, P. D.                     | (Cover—back, outside) |
| South African Fertilizers Co., The | i.                    |
| Starke, C., & Co.                  | 13                    |
| Steel Murray & Co.                 | 12                    |
| Stewart & Lloyds                   | 19                    |
| Wattle Extract Co., The            | 7                     |
| Webster                            | 26                    |
| Wilson, J. M.                      | 9                     |
| Wood, William                      | 26                    |



# OUR NEW STYLE. High Class Gang Plough.

## *The Canadian Chief*

Represents the latest achievement in the construction of Advanced Agricultural Implements of entirely new and greatly superior design.



Awarded First Prize, Johannesburg Trials,  
— 1908. —

As the acknowledged leaders of the plough trade we have always been to the fore in introducing the most advanced implements, and our latest improvement, THE CANADIAN CHIEF, is unquestionably the finest two-furrow gang plough ever imported into South Africa. It is simple and light in draft, whilst all the most up-to-date improvements in plough construction have been embodied in it. THE CANADIAN CHIEF is meeting with phenomenal success, and everywhere gives perfect satisfaction.

## Malcomess & Co., Ltd.

ESTABLISHED  
1870.

## East London



---

# AT STUD

---



For Season 1909,

THE THOROUGHBRED HORSE

**"BAY LAWN."**

---

*By 'Green Lawn,' by 'Kendal,' etc.*

*Out of 'Tester,' by 'Fernandy,' etc.*

"BAY LAWN," is a sure foal-getter and runs with mares by day. He is winner of many races. 1st at Durban Show (only time shown).

**FEE—7 GUINEAS** for blood mares and moderate fee for ordinary mares, with reduction for two or more. Free summer run.

---

## - FOR SALE -

Shorthorn Bulls, Cows and Heifers, Shropshire Down Rams, Riding and Driving Horses, Milk Cows.

### POULTRY.

Plymouth Rocks, Buff Orpingtons, Black-Red Old English Game, White Wyandottes, Old English Game Bantams, Rouen Ducks, White Leghorns, Indian Game. Sittings of 13 eggs from above, 10s. 6d. All returned unfertile eggs replaced.

---

**For Lease** Blood Pony Fillies by "ARCANO." Many of this strain are winners, which include "CHARITY CLOAK" (one of the best ponies ever bred in South Africa); "ARCANE" (champion pony in South Africa for his height); "ARCANO," "ARCANESS," "ARCADIENNE," "QUEEN ANNE," and many others.

---

**D. Simmons,**

**Mooi River, Natal.**